Mental Health and Health-Risk Behaviors in Adolescence:

An Examination of Social Relationships

by

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Dedication

To My Family

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Abstract

  Youth mental health and health-risk behaviors that are left unattended may have detrimental consequences for personal and social wellbeing in the long-run. Thus, the examination of social relationships associated with adolescent behavioral health conditions is critical, as it can present knowledge to effectively guide prevention and intervention programs. In response to such research needs, this three-essay dissertation analyzes two unique panel datasets concerning first and second generation immigrant youth in the U.S. and adolescents in South Korea.

  Grounded in the ideas of social stress theory, Chapter 2 explores the plausibility of the presence of a systematic relationship between exposure to perceived discrimination and the mental health response to discrimination among youth of immigrant backgrounds. In the study, adolescents who were most likely to be exposed to perceived discrimination showed a smaller mental health response, possibly through mechanisms of adjustment, coping, and resiliency development. Results underscored the need to tailor interventions such that they incorporate mechanisms that effectively account for differential response to stressors across youth.

  Chapter 3 investigates the different magnitudes of the marginal change in conditional depressive symptoms scores associated with the experience of perceived discrimination among a sample of immigrant youth. Results suggested that estimates of the discrimination-depression association that focus on the average individual would have

understated the potential harm of perceived discrimination on depressed moods in the high end of the conditional depression distribution. Findings may provide important implications for understanding stressful social relationships and its association with depressive symptoms particularly in the most marginalizing conditions.

Finally, Chapter 4 examines the role of social capital—an informal mechanism of social control embedded in youth relationships with the family and community—in preventing the onset of health-risk behaviors among Korean adolescents. The strong association between family-level social capital and youth outcomes highlighted the importance of informal family-based prevention and intervention practices. Relational resources in the community were also proven important, but only for health-risk behaviors that often occur in communal areas. Results underscored the value of informal family and community mechanisms of control, alongside formal legislative forms of control in preventing the onset of youth health-risk behaviors.

Chapter 1

Introduction

Mental Health and Health-Risk Behaviors in Adolescence

Adolescence is a period during which youth experience physical, neurological, and cognitive transformations, as well as shifts in the nature of relationships by developing new social ties and roles across social domains (Moretti, 2004; Weisz & Hawley, 2002). As a consequence of such dynamic transformations, youth may become easily vulnerable to multiple forms of risks related to *poor mental health* and *health-risk behavior* during this period.

Throughout this dissertation, the term "poor mental health" is used to encompass relatively high levels of mental symptoms, such as depressive symptoms. Also, "health-risk behaviors" are defined as behaviors that may directly or indirectly contribute to the development of mortality or morbidity. Examples of health-risk behaviors include substance use behaviors (e.g., cigarette smoking, alcohol consumption), externalizing behaviors (e.g., aggression, rule breaking), and unsafe sexual activities (e.g., unprotected intercourse, prostitution, imposing sexual harassment). Finally, the term "behavioral health" refers to the combination of both mental health and health-risk behaviors. The dissertation does not restrict measures of poor mental health and health-risk behaviors to clinical levels of disorder. It is crucial to examine non-clinical levels of behavioral health

concerns among adolescents because non-severe conditions in adolescence may develop into severe problems in adulthood (elaborated below).

The 2009 National Youth Risk Surveillance Survey ($N = 16,410$) reported that a startling proportion of youth (9th to 12th graders) in the U.S. have experienced poor mental health and health-risk behaviors (CDCP, 2010). For example, among youth nationwide, 26.1% experienced depressive symptoms (felt sad or hopeless almost every day for two or more weeks in a row to the extent that it hindered their daily activities during the past 12 months), 31.5% were involved in physical aggression (was involved in a physical fight one or more times in the past 12 months), 19.5% smoked cigarettes (smoked cigarettes on at least 1 day during the past 30 days), 41.8% consumed alcohol (had at least one drink of alcohol on at least 1 day in the past 30 days), 24.2% experienced binge drinking (had five or more drinks within a couple of hours on at least one day during the past 30 days), and 38.9% of the sexually active youth did not use contraceptives during their most recent sexual intercourse.

Research contends that various health-risk behaviors and mental health conditions that are developed at an early life-stage may often result in elevated risks of experiencing severe levels of morbidity or mortality in adulthood (CDCP, 2010; Kessler et al., 2005; Merikangas et al., 2010). Estimates for the age-of-onset distributions of the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (*DSM-IV)* disorders from a nationally representative U.S. study of adults support this finding, as the time of diagnosis for clinical levels of disorders for most survey respondents was around early adulthood (Kessler et al., 2005). More specifically, the 25th and 75th percentile range of the age-of-onset distributions was 18-27 years of age for substance use disorders (e.g.,

alcohol abuse and dependence) and 18-43 years for mood disorders (e.g., major depressive disorder). These estimates suggest that if non-severe levels of behavioral health conditions during adolescence are unattended, these mental health conditions and health-risk activities may result in severe consequences later in life.

The adolescence-adulthood temporal continuum of behavioral health conditions that is observed in empirical health research is in accordance with the life course perspective (Elder, 1998). In detail, the theoretical view asserts that risk behaviors that are developed earlier in life, but are left to proliferate, may evolve into even greater medium- and long-term health-related consequences through the accumulation of disadvantages. Consistent with the existing empirical findings, proponents of this theoretical perspective will claim that mental health status and health-risk behaviors in adulthood are strongly contingent upon their disadvantaged life experiences in the past, including adolescence.

From a practice perspective, the study of behavioral health issues during adolescence is particularly important, as the development of various forms of mental health and health-risk conditions are oftentimes preventable (CDCP, 2010; Kessler et al., 2005). Thus, prior research in the field of behavioral health has emphasized that studies should have a greater emphasis on prevention and early intervention methods in adolescence, as the antecedents of common behavioral health disorders in adulthood may emerge at a younger developmental stage (e.g., CDCP, 2010; Kessler et al., 2005; Merikangas et al., 2010).

Social Relationships and Adolescent Behavioral Health

As presented above, empirical evidence and supporting theory suggests that adolescence is a critical period that determines contemporaneous wellbeing, as well as an individual's long-run wellbeing. The identification of a constellation of social factors that contribute to youth socialization can shed light on ways to prevent poor mental health and health-risk behaviors from progressing into severe cases of morbidity, especially among an age-group that is highly vulnerable to developing multiple forms of risks (Weisz & Hawley, 2002). Thus, issues of mental health and health-risk behaviors in adolescence, in consideration of *social relationships,* should merit foremost attention by researchers and practitioners.

The term "social relationships" that is used throughout this dissertation refers to the both positive and negative *social interactions* between individuals that occur within various physical environments or social institutions of the family, community, school, or broadly the country. An example of a positive social relationship may include communication and information sharing between the parent and youth. Another example of a positive social relationship may be the availability of mutual trust and social cohesion among members of a residential community. On the other hand, negative social relationships may include feelings of being discriminated against by others, as the act of perceiving discrimination may involve the social interaction between the inflictor and the receiver within social institutions.

As mentioned above, understanding youth behavioral health conditions and the association with social relationships is important. However, an extensive overview and

synthesis of the related literature has pointed to three general research gaps concerning this topic of behavioral health and social relationships in adolescence.

First, although existing literature provides a wealth of information about youth mental health and health-risk behaviors, as well as the social relationships with which youth interact, most research has been concentrated around U.S. populations. Given that youth behavioral health outcomes are highly contingent upon various social relationships (e.g., Galambos, Barker, & Almeida, 2003; Simons, Lin, Gordon, Brody, & Rand, 2002), it is imperative that research on *understudied populations*—including, emerging and growing populations within the U.S., as well as international populations—become more widely available. This information is instrumental for designing programs that is sensitive and tailored to the needs of the specific demographic populations of interest.

Second, most quantitative studies have had a tendency to ignore *heterogeneous relationships* between social factors and youth behavioral health outcomes. For example, to obtain the most effective prevention and intervention results, it is crucial to be knowledgeable about the extent to which the experiences of marginalized youth are different in comparison to non-marginalized youth. Equally important is to identify whether a single harmful social relationship would induce the same behavioral health response across youth. In other words, in the literature, it is unclear whether individuals who are embedded in more disadvantaged situations are more resilient or vulnerable to negative events in terms of mental health.

Third, most research has focused on the prevalence of mental health and health-risk behaviors. However, for the purpose of proposing prevention and early intervention programs, a deeper evaluation of the social relationships that predict the *onset* of youth

behavioral health outcome may be warranted. This is because prevalence studies are limited in discerning information about individuals who have not yet experienced any behavioral health concerns.

To address the aforementioned missing pieces of the current youth behavioral health literature, this dissertation adopted a three-essay dissertation format. A detailed description of the demographic populations that motivated the dissertation studies, the gaps in the literature specifically concerning the populations of interests, the dataset used for analysis, specific research questions concerning each essay, and finally, the contribution of each essay, as well as the dissertation as a whole, are discussed in the following sections.

Two Demographic Groups Motivating Research

This dissertation focuses on two distinct youth populations within the U.S. and South Korea (hereafter referred to simply as Korea). The two focal groups are underrepresented in the literature, but are of emerging public concern due to their elevated risk of developing poor mental health conditions and health-risk behaviors. Of the three essays comprising the dissertation, two (Chapters 2 and 3) examine first and second generation immigrant youth in the U.S. The third essay (Chapter 4) focuses on a nationally representative sample of Korean adolescents.

First and Second Generation Immigrant Youth

The first demographic group of interest is first and second generation immigrant youth in the U.S. Examining the everyday experiences of adolescents with immigrant

backgrounds is timely in the present day U.S. First, this demographic group has had a growing presence in the U.S. in the recent decade. In 2010, children (0-17 year-olds) living with at least one foreign-born parent constituted approximately 23% of all children in the U.S. (King et al., 2010). This figure was a dramatic increase from 15% that was reported in 1994 (King et al., 2010), and is anticipated to rise, such that in the year 2050, children of immigrants may comprise one third of the U.S. children population (Passel, 2011).

Not only has there been an increase in the quantity of first and second generation immigrant youth, but more importantly, their quality of life is also of growing public concern. There has been increased recognition that members of this demographic group are exposed to a greater set of social conditions closely related to adverse mental health conditions (Perreira & Ornelas, 2011). A sizable proportion of the unequal distribution of poor mental health conditions among youth of immigrant backgrounds may be attributable to the disproportionately greater challenges they may face with respect to various domains concerning their demographic, socioeconomic, interpersonal, and assimilative status conditions. For example, literature has shown that youth from immigrant families are majority non-white or Hispanic (King et al., 2010), disproportionately in poverty (King et al., 2010), and experience assimilative challenges (Suárez-Orozco & Suárez-Orozco, 2001).

Such adversities may directly or indirectly contribute to increased levels of experiences of perceived discrimination, which may subsequently pose perilous consequences for mental health, particularly for depressed mood (Williams & Mohammed, 2009; Williams, Neighbors, & Jackson, 2008). It is thus crucial that

researchers and practitioners attend to the issue of discrimination and its correlates among the growing and potentially vulnerable demographic group of first and second generation immigrant youth as they are expected to play an increasingly vital role in contributing to U.S. society in the imminent future.

South Korean Youth

The second demographic group of interest is Korean adolescents residing in Korea. Korea may provide a completely different socioeconomic and cultural context compared to that of the U.S. However, consistent with the findings of U.S. youth (CDCP, 2010), existing literature concerning Korean youth has suggested that adolescence is the period during which a large fraction of youth engage in various types of health behaviors for the first time (MOGEF, 2010; Rhee, Yun, & Khang, 2007).

In particular, underage drinking and smoking is highly prevalent in Korea and has been considered a severe public health risk since 1990s (Hong, Lee, Grogan-Kaylor, & Huang, 2011). In 1999, in response to rising public demand, the Juvenile Protection Act was introduced (MOGEF, 1999). This law prohibits commercial businesses and individuals from offering services and products that may inflict harm towards the wellbeing of youth under the age of 19. Despite legislative efforts, a recent national study revealed that a large proportion of middle school and high school students reported consuming alcohol (51.9%) and smoking (18.7%) in their lifetime (MOGEF, 2010).

In addition to substance use behaviors, aggression—particularly in the form of verbal and physical harassment within the school environment—has also been of national concern in Korea. Recently in 2009, in attempt to reduce incidences of individual- and

group-initiated bullying and victimization, the Act on the Prevention of and

Countermeasures against Violence in Schools was enacted (MOEST, 2012). Despite

legislative efforts to prevent the use of aggression and protect vulnerable victims on

school grounds, national reports have shown that 12.4% of youth reported to have exerted

aggression toward other students at school in the past year (FPYV, 2009).

As mentioned above, prevalence of health-risk behaviors among Korean

adolescents is high, despite legislative efforts at the national level. Thus, the

identification of informal protective measures at the family and community level that

reduce youth engagement in various forms of health-related behaviors seems especially

pertinent to the needs of present day Korea.

Gaps in the Literature

Perceived Discrimination and Depressive Symptoms among Youth of Immigrant Families

Although the literature has firmly established that perceived discrimination

predicts higher levels of depressed moods, two limitations exist in research concerning

the mental wellbeing of youth of immigrant backgrounds. First, although stress theorists

have argued for the need to examine the association between perceived discrimination

and depressive symptoms among individuals with similar exposure to discrimination

(Kessler, 1997; Kessler, Mickelson, & Williams, 1999), the direction of the relationship

between exposure to stress and the mental health response is unclear. The ability to

identify whether individuals, who are most likely to be exposed to perceived

discrimination, develop patterns of resiliency or vulnerability to the harmful effect of

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discrimination is important for intervention research that target youth of immigrant backgrounds.

Second, it is unrealistic to assume that a group of individuals who have high risk of developing severe mental health symptoms behave similarly towards discriminatory situations, compared to those who have low risk of developing mental problems. However, in examining the association between perceived discrimination and depressive symptoms, most studies have relied on analytic methods that estimated a *single* parameter with standard regression models based on the conditional mean that only reflects the relationship for the *average* youth. However, the central population of concern among practitioners and policy makers may be youth in the most marginalized conditions than normative youth. Thus, the ability to detect how association between discriminatory experiences and depressed moods is different in the higher end of the conditional depressive symptoms distribution compared to the lower end may offer a critical piece of information for effective program design.

Korean Adolescents and Health-Risk Behaviors

With regards to the context of Korea, there are three important areas that merit further investigation. First, there is a need to emphasize informal family- and community-level efforts in the prevention of adolescent health-risk behaviors. The historically high prevalence of undesirable behavioral health outcomes over the years has raised the concern that national legislative efforts to prevent these activities alone may not be sufficient. Thus, formal legislations that mostly focus on the responsibility of public agencies or commercial entities in protecting youth from engaging in various

forms of health-risk behaviors may need to be accompanied by *informal family and community mechanisms of social control* that governs youth actions, as well.

Second, although numerous studies have predicted the prevalence of health-risk outcomes concerning Korean adolescents, only a few have *simultaneously examined* the role of informal family and community-level resources as an effective source of mechanism that is related to the prevalence of adolescent behavioral health outcomes (e.g., Lee, Kim, & Kim, 2010; Lee & Kong, 2010). The consideration of informal relationship-based family and community relationships is important because both social factors may play a distinct role in youth socialization processes.

Third, hardly existent are studies that investigate how family and community social capital contribute to *preventing or delaying the onset* of a host of health-risk outcomes among Korean youth using longitudinal data. Event history models have been analyzed to predict early initiation of youth health-risk behaviors (e.g. Kim & Kim, 2010), but these models only examined the role of socioeconomic conditions—not informal family or community relational processes that may play an effective role in the prevention of health-risks.

Data used for Empirical Examination

To address the aforementioned gaps in the literature concerning mental health and health-risk behaviors among youth of immigrant background in the U.S. and Korean adolescents, the dissertation uses two datasets to conduct three empirical studies in three separate chapters.

Children of Immigrants Longitudinal Study

An excellent publicly available secondary dataset for examining the wellbeing of first and second generation immigrant youth in the U.S. is the Children of Immigrants Longitudinal Study (1991-2006; Portes & Rumbaut, 2008). Youth respondents of the Children of Immigrants Longitudinal Study (CILS) were either U.S.-born with at least one foreign-born parent or foreign-born who migrated to the U.S. with their foreign-born parent(s). The CILS contains a rich set of information on demographic and socioeconomic characteristics, mental health conditions, experiences of perceived discrimination, interpersonal relationships, assimilation, and school characteristics of the survey respondents.

In Wave 1, the CILS surveyed 8th-9th grade public and private school students in California (San Diego; 48%) and Florida (Miami and Fort Lauderdale; 47% and 5%) ($N = 5,262$). A follow-up survey was conducted three years after the original study when the respondents were in 11th-12th grade (Wave 2; $N = 4,288$), and then again 10 years later (Wave 3; $N = 3,613$). Although CILS is not a national dataset, it represents a diverse set of individuals from 77 different nationalities. Some of the most common national origins of the respondents were Cuba (23.3%), the Philippines (15.6%), Mexico (14.3%), Vietnam (7.0%), Nicaragua (6.5%), Columbia (4.3%), Haiti (3.4%), and Jamaica (3%). Additionally, though few in number, individuals with Middle Eastern, African, and European origins were included in the study.

Korea Youth Panel Survey

The Korea Youth Panel Survey (2003-2008; KYPS), collected by the Korean National Youth Policy Institute, presents a great opportunity to understand protective family and community relationships for youth health-risk outcomes (NYPI, 2010). The respondents of this nationally representative survey were identified using stratified multi-stage cluster sampling from 12 metropolitan cities and provinces in Korea. The prospective six-wave KYPS offers an extensive set of data on health-risk outcomes, youth demographics, family SES and parenting variables, and quality of the community.

The first wave of the KYPS surveyed 3,449 adolescents in their second year of middle school (equivalent to 8th grade) and their parents. Follow-up surveys were conducted every year for five years, until respondents were on average 19 years old. There were 2,459 respondents in Wave 6 (the final wave of the study), which represents an attrition rate of 71.3% compared to Wave 1. An advantage of the KYPS is that it contains retrospective information about first-time engagement concerning fourteen different types of behavioral health outcomes that occurred prior to Wave 1, as well as the age of first initiation of that outcome. The availability of this retrospective data allows the scope of the analysis of Chapter 4 to extend beyond the six waves of the prospective panel data.

Contribution of the Dissertation

To reiterate, empirical and theoretical research suggests that the examination of mental health and health-risk behaviors in adolescence in the context of social relationships is crucial. The study of adolescents is particularly important in behavioral

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health research, because it is during this period—with the availability of appropriate prevention and early intervention—that the development of severe cases of morbidity and mortality later in the life course may be prevented. An extensive review of the literature has pointed to some of the missing pieces of the related literature. In response, this dissertation adopts a three-essay structure to attend to the issues pertaining to youth mental health and health-risk behaviors among two vulnerable demographic groups within the U.S. and Korea.

The immediate goal of the three chapters is to answer relevant questions to address some of the research gaps in the behavioral health literature.

Chapter 2 is an exploratory study with the objective of adjudicating between two competing hypotheses concerning the theoretic claims of the social stress model (Kessler, 1979; Lazarus, 1999; Thoits, 2010; Turner & Avison, 2003) and is relevant to understanding the relationship between perceived discrimination and depressive symptoms. Specially, the chapter attempts to answer the following question using a sample of first and second generation immigrant youth in the U.S.: *How is the level of exposure to perceived discrimination related to the differential mental health response to discrimination? In other words, do individuals who are most likely to be exposed to situations in which they perceive discrimination show the greatest, or the smallest mental health response to such stressful events?*

The goal of Chapter 3 is to conduct a descriptive study to examine the different distributional patterns of depressive symptoms among youth of immigrant families in the U.S. who have experienced discrimination and those who have not, conditional on various demographic and social attributes. The primary research question of this chapter

is: *Is the association between perceived discrimination and depression greatest in the higher end of the distribution, at which adolescents with greater risk of being depressed conditional on personal and environmental factors may be concentrated*?

Chapter 4 investigates a nationally representative sample of Korean adolescents and identifies the contribution of informal mechanisms of social control within the family and community for understanding youth health-risk behaviors (e.g., smoking, drinking, aggression, rule-breaking, unsafe sexual activity). Adopting social capital theory (Coleman, 1988), this chapter asks: *Do family- and community-level social capital each predict the onset of health-risk behaviors among Korean youth? Also, is either type of social capital more effective in preventing the development of any particular health-risk behaviors?*

Finally, beyond the immediate research goals of each of the three chapters, the dissertation aims to have a broader contribution in adolescent behavioral health literature. The general objective of the dissertation is to focus on the ways in which a constellation of multi-dimensional social relationships are associated with youth behavioral health outcomes. As the dissertation is relevant to current social concerns and policies, analytical findings may be crucial for guiding preventive work. Additionally, evidence provided by the results from the empirical examinations of the dissertation may present ideas for possible points of intervention and propose policy recommendations to contribute to enhancing the wellbeing of youth.

Chapter 2

Patterns of Adaptation in Mental Health Response to Perceived Discrimination

Among Adolescents of Immigrant Backgrounds in the U.S.

INTRODUCTION

Perceived discrimination has been a pervasive concern in the United States for decades (Kessler et al., 1999; Williams & Mohammed, 2009). In a national study, as many as 60.9% of adults (age 25-74) reported to have experienced some level of chronic daily perceived discrimination (Kessler et al., 1999). At an individual-level, examining the issue of perceived discrimination is pertinent not only because the feeling of being treated unfairly is common, but also because perceived discrimination is strongly linked with the development of poor mental health outcomes such as feelings of depression which in turn may lead to poor physical health and increased substance use (Williams et al., 2008). At a structural level, addressing the issue of perceived discrimination is imperative because it may perpetuate the stratification of mental health outcomes along various personal and social dimensions including race and ethnicity, immigration status, gender, and education (Thoits, 2010).

In attempt to attend to this salient and pervasive social concern regarding perceived discrimination and its association with mental health, research has traditionally examined *exposure* and *response* to discrimination (Kessler, 1979). With regards to

exposure, researchers have asked: *Who is most likely to experience perceived discrimination?* At the same time, with regards to response, scholars have inquired: *Who shows the greatest mental health response to perceived discrimination?* Although exposure and response has been firmly grounded in the literature as two key components for understanding perceived discrimination and its correlates, the link between these two areas of concern has not been thoroughly examined (Williams et al., 2008). Given these two sets of questions, this chapter asks: *How is level of exposure to perceived discrimination related to the differential mental health response to discrimination?* In other words, *do individuals who are most likely to be exposed to situations in which they perceive discrimination show the greatest, or the smallest, mental health response to such stressful events?*

There may be two competing hypotheses that address this question. The *exacerbation hypothesis* would predict that *individuals who are most likely to be exposed to perceived discrimination would display a larger mental health response* possibly through processes of increased vulnerability, frailty, and stress overload. Conversely, the *adaptation hypothesis* may lend support to the idea that *individuals who are most likely to be exposed to perceived discrimination would show a smaller mental health response* through mechanisms of adjustment, desensitization, coping, and resiliency development.

The current study adjudicates between these two competing hypotheses with a sample of adolescents from immigrant backgrounds in the United States, a demographic group that has commonly highlighted perceived discrimination as a salient stressor that occur in their daily lives (Suárez-Orozco & Suárez-Orozco, 2001). In the first section, the chapter discusses the theoretical framework concerning the interplay between exposure to

and response to perceived discrimination. Based on stress theory, the chapter suggests

two possible models—exacerbation and adaptation hypotheses—that may explain the

relationship between differential exposure and response to perceived discrimination.

Then, the applicability of these two hypotheses is tested with a convenience sample of

adolescents of immigrant backgrounds from California and Florida. Finally, practice and

policy implications of this study are discussed.

BACKGROUND

Differential Response and Differential Exposure: Theoretical Framework

Social stress theorists have claimed that exposure to perceived discrimination and

the response to it are not separate processes, but in fact are closely linked, such that

different levels of exposure to a stressor can alter the way individuals respond to it

(Kessler, 1979; Thoits, 2010; Turner & Avison, 2003). Theorists have proposed that

differences in exposure to stressful events arise from variations in personal and social

conditions (e.g., race gender, socioeconomic status, immigrant status, and social support)

that characterize an individual (Turner & Avison, 2003). These multidimensional

attributes constituting the individual, in turn, may shape personal meaning and

internalization of the stressful event, and thereby elicit various degrees of emotional

response (Kessler, 1979). Thus, individuals with personal or social attributes that situate

them at higher levels of risk of exposure to perceived discrimination may systematically

show a large or a small response to the stressful event, compared to those with status

attributes that position them at lower levels of risk. For instance, the association of

perceived discrimination with feelings of depression for individuals in low

socioeconomic positions may be different from that of individuals in high socioeconomic positions because individuals from high and low socioeconomic backgrounds have different risks of exposure to discrimination. Pointing to this pattern of heterogeneity, stress theorists have argued that it is critical to examine the association between perceived discrimination and depressive symptoms among individuals with similar risk of exposure to discrimination in order to accurately assess the level of emotional response to the stressful event (Kessler, 1997; Kessler et al., 1999; Williams et al., 2008)

However, despite the firmly established idea that there may be systematic heterogeneity in the response to perceived discrimination by differential stress exposure, the direction of the relationship between differential exposure and response is unclear. One plausible scenario would be for the increase in depressive symptoms due to perceived discrimination to be *smallest* among individuals with *greatest exposure* to discrimination. These high-risk individuals who show a small emotional reaction to the experience of perceived discrimination can be described as being emotionally resilient to the stressful event. These patterns of resiliency have been demonstrated in previous studies. For example, a study of adolescents found that males reported to have had more frequent experiences of daily discrimination, but females were more responsive to it (Turner & Avison, 2003). Similarly, in a nationally representative study, non-Hispanic blacks showed greatest lifetime exposure to major lifetime discrimination, but experience of discrimination resulted in a smaller increase in depressive symptoms, compared to their white counterparts (Kessler et al., 1999).

In this chapter, this inverse relationship between differential exposure to perceived discrimination and emotional response is called the *"adaptation hypothesis"*

(on left-side of Figure 1). This hypothesis suggests that high-risk individuals exhibit

patterns of adaptation to a strenuous event by presenting a relatively small increase in

depressive symptoms in response to perceived discrimination, compared to low-risk

individuals (on left-side of Figure 2). In this case, the difference in the depressive

symptoms score between high- and low-risk individuals is smaller among those who have

experienced perceived discrimination, relative to those who have not. This adaptation

process may arise as high-risk individuals improve their capacity to cope with such

stressful and demanding situations and learn to effectively draw on available resources.

Additionally, these individuals may have developed a sense of mastery and control over

the discriminatory event such that they are not emotionally scarred by it to a large extent,

thereby exhibiting adjustment, desensitization, coping, and resiliency toward the harmful

effect of the negative situation.

Figure 1. Relationship between exposure and response to perceived discrimination
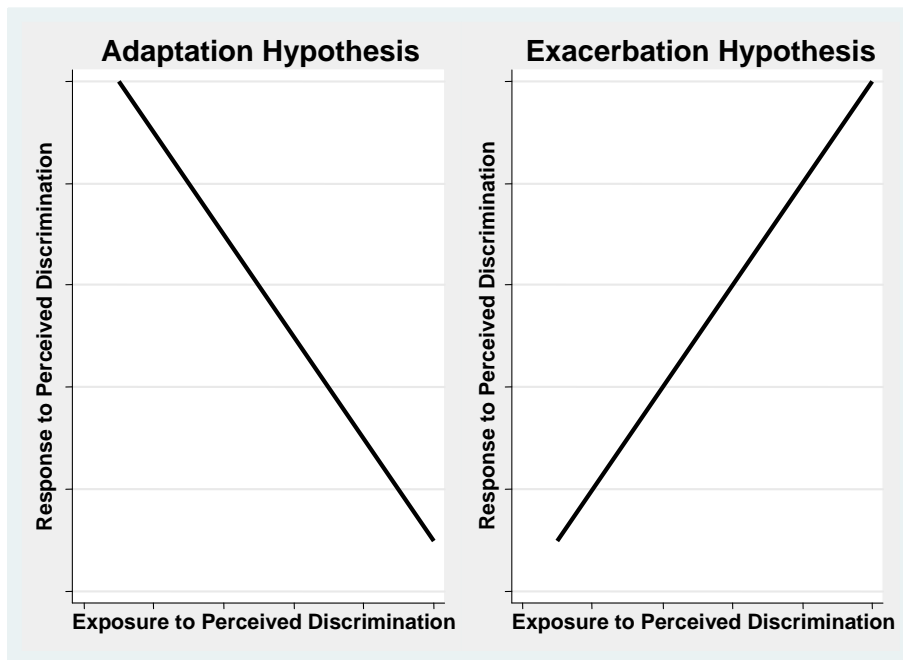
Figure 2. Relationship between perceived discrimination and depressive symptoms (alternative representation)
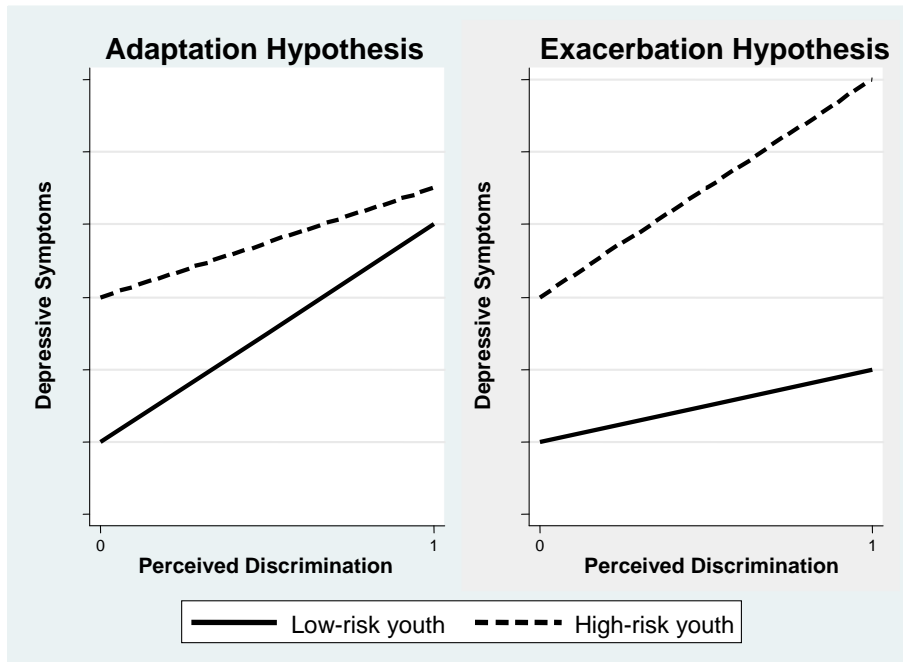
Conversely, an alternative possible scenario would be for emotional response to be *greatest* among individuals with *greatest exposure* to perceived discrimination. In this case, there is a *positive relationship* between exposure to perceived discrimination and the size of the stress response (on right-side of Figure 1). Under this hypothesis, the gap in depressive symptoms score between high- and low-risk individuals is larger among those with experiences of perceived discrimination, compared to those who do not have such experiences. These patterns have been apparent in existing empirical studies, as well. For example, low socioeconomic status has traditionally been a key determinant of elevated levels of exposure to stress (Pearlin, Schieman, Fazio, & Meersman, 2005; Turner & Avison, 2003). Concurrently, the studies have suggested that the effect of stress on depressive symptoms would be greatest among individuals with low income and education than those at high socioeconomic positions (Pearlin et al., 2005).

In this chapter, the patterns in which the mental health response to a stressful event is exacerbated among individuals with highest risk of experiencing perceived discrimination, relative to those with lower risks, is labeled the "*exacerbation hypothesis*" (on right-side of Figure 2). Perceived discrimination may have a large effect on mental health when individuals experience stress overload, and subsequently, become more emotionally sensitive to the experience of discrimination due to the cumulative strains from high levels of exposure to the stressor. Limited access to objective resources for effective coping to deal with the stressful situation (Kessler et al., 1999) can also be a possible mechanism that may explain this pattern of exacerbated effects of discriminatory strains on feelings of depression.

In sum, whether being in a highly disadvantaged context that places individuals at high risk of discrimination elicits a small increase in depressive symptoms (adaptation hypothesis) or a large increase (exacerbation hypothesis) is central for understanding the direct relationship between perceived discrimination and psychological distress, and further, the unequal distribution of mental health conditions that are engendered across social distributions. This information is imperative for identifying individuals most at risk and targeting interventions for those most in need. However, this systematic relationship between differential exposure and response to discriminatory strains has not been examined systematically in this field of research (Williams et al., 2008). Prior studies have used various demographic and socioeconomic attributes to only proxy exposure to discrimination, but not have directly tested the relationship between the multidimensional concept of exposure and mental health response to perceived discrimination.

To examine the direction of the general systematic relationship, this chapter focuses on one specific population—first and second generation immigrant youth in the U.S.—that has had emerging significance in the general discrimination-distress literature. The following section elaborates on how the study of this particular demographic group may present an opportunity to expand our understanding of the plausibility of the two competing adaptation and exacerbation hypotheses.

Determinants of Perceived Discrimination among Children of Immigrants

Examining the relationship between differential exposure and response to perceived discrimination among first and second generation immigrant youth is timely. In the present day United States, one out of four children live in families with at least one foreign-born parent (King et al., 2010), and projections have estimated this figure to increase such that by 2050 one out of three children will be from families of immigrant backgrounds (Passel, 2011). Attending to youth of immigrant background in understanding perceived discrimination and its correlates is critical because this demographic group has commonly pointed to the experience of perceived discrimination as one of the most difficult struggles ongoing in their daily lives (Suárez-Orozco & Suárez-Orozco, 2001). In some instances, these youth have even considered perceived discrimination as a source of traumatic stress (Flores, Tschann, Dimas, Pasch, & de Groat, 2010). In the literature concerning this topic, a host of studies have attested to the severity of experiencing perceived discrimination and its correlates among the vast majority of first and second generation immigrant youth (e.g., Potochnick & Perreira, 2010; Suárez-Orozco & Suárez-Orozco, 2001; Wang, Siy, & Cheryan, 2011).

Compared to their non-immigrant counterparts, youth of immigrant family backgrounds may experience elevated levels of discrimination because of their personal and social status characteristics, such as race and ethnicity, assimilative challenges, and socioeconomic status. First, currently, less than 20 percent of children of immigrants (age 0-17) are non-Hispanic white (King et al., 2010). The development of negative sentiments, preference for lighter skin color, treatment as perpetual foreigner and being denied "American" identity (Schwartz, Unger, Zamboanga, & Szapocznik, 2010; Suárez-Orozco & Suárez-Orozco, 2001; Wang et al., 2011) are several forms through which unfair or unjust treatment can be manifested toward *racial and ethnic minority groups* including those with immigrant backgrounds.

Second, *assimilative challenges* such as language barriers due to lack of English proficiency or use of an English-accent can be a risk factor for greater exposure to perceived discrimination (Suárez-Orozco & Suárez-Orozco, 2001). Also, having to juggle between the salient ethnic and cultural differences of the host society and parent's culture may also expose first and second generation immigrant youth to greater risks of experiencing perceived discrimination (Montazer & Wheaton, 2011; Zhou, 1997).

Third, low *socioeconomic conditions* can increase risks of being the targets of unfair or unjust treatment as well (Thoits, 2010). About 33 percent of foreign-born children with foreign-born parents are below the poverty line in 2010, which is substantially higher than the 18 percent for U.S.-born children with U.S.-born parents (King et al., 2010). Low socioeconomic status among youth from immigrant families may be attributed by the fact that many adolescents from immigrant families may have experienced downward social mobility after moving to the U.S. (relative to country of

origin) because of parents' language and other cultural barriers (Edwards & Romero, 2008; Yeh, Kim, Pituc, & Atkins, 2008).

As described above, youth of immigrant backgrounds may share common personal and social attributes that may increase their likelihood of experiencing perceived discrimination, relative to other adolescents without immigrant backgrounds in the U.S. Yet within this demographic group, there exists heterogeneity in terms of physical features, cultural integration, socioeconomic status, and other characteristics, such that some first and second generation youth may be more exposed to discrimination than others. As stress theory suggests, this differential exposure to perceived discrimination may determine the way youth become resilient or vulnerable to the harmful effect of negative life events. However, whether youth, who are characterized with personal and social attributes that sort them into having heightened risk of experiencing discrimination, systematically show a small (adaptation hypothesis) or large (exacerbation hypothesis) mental health response merits further investigation. Using a large sample of adolescents of immigrant backgrounds in California and Florida, this paper adjudicates these two competing hypotheses.

METHODS

Data

This paper examined the Children of Immigrants Longitudinal Study (1991-2006) to investigate patterns of exacerbation or adaptation in the effect of discrimination on depression among first and second generation immigrant youth from San Diego (48%), Miami (47%), and Fort Lauderdale (5%) (Portes & Rumbaut, 2008). The current analysis

is primarily based on the second wave of data from this study, but also uses information from the first wave as control variables in the analytic models. Of the 4,288 youth who were originally part of Wave 2, the present study analyzed 4,135 individuals with all relevant information on the covariates of interest.[1]

Dependent Variable

The dependent variable was a four item subscale of the Center for Epidemiologic Studies Depression scale (Radloff, 1977)($\alpha = 0.76$). The question asked the respondents to rate their depressed affect (e.g., "I felt sad," "I felt depressed") and somatic level (e.g., "I could not get going," "I did not feel like eating") in the past week on a Likert scale: 0 = "rarely," 1 = "some of the time (1-2 days)," 2 = "occasionally (3-4 days)," 3 = "most of the time (5-7 days)."

Independent Variable

The independent variable was a youth self-report measure of their lifetime experience of perceived discrimination ("Have you ever felt discriminated against?"). This variable was a binary measure that coded youth who had ever experienced perceived discrimination as "1," and "0" otherwise. This most widely used measure of perceived discrimination represents individual's lifetime experiences and can effectively capture cumulative exposure to the stressor (Williams & Mohammed, 2009).

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[1] The size of the follow-up survey (Wave 2) was 81.5% of the original sample (Wave 1). Also, there were no sampling weights available for this survey.

Control Variables

Measures of demographic characteristics, socioeconomic status, acculturation, social support, and measures from wave 1 were included as controls. These measures were also used to construct the propensity score that estimated the probability of perceived discrimination. In detail, demographic characteristics were *gender* (coded as "1" if male, and "0" if female), *age* (continuous measure), *race* (dummy-coded as Asian, Black, Hispanic, White, multi-race), and the *racial makeup* of the school (percentage of Asian, Black, Hispanic, and White students). *Socioeconomic status* was a standardized composite measure of parents' education, occupation, and home ownership (Rumbaut, 1994). The *two-parent family* measure was "1" if the respondent lived with both biological parents and "0" otherwise. The level of acculturation was measured by *time in the U.S.* (dummy coded for each of the four categories: "all my life," "ten years of more," "five to nine years," "less than five years") and *language ability* (dummy coded for each of the four categories: "fluent bilingual," English dominant," "foreign language dominant," "limited bilingual").

Social support measures included family cohesion and conflict with parents. The *family cohesion* measure was the average of three questions ($\alpha = 0.85$) concerning the level of bonding in the family (e.g., "Family members like to spend free time with each other," "Family members feel very close to each other," "Family togetherness is very important"). Each question had a five-item response category of 1 ("never"), 2 ("once in a while"), 3 ("sometimes"), 4 ("often"), and 5 ("always"). *Conflict with parents* was the weighted average of three items ($\alpha = 0.69$) that represented conflict between the youth and parent (e.g., "Parents don't like me much," "Parent/I argue/conflicting goals,"

"Parents not interested in what I say"). For the current analysis, response options were reverse coded, such that 1 ("not true at all"), 2 ("not very true"), 3 ("partly true"), 4 ("very true").

Finally, measures from wave 1 were included as controls. The *Rosenberg self-esteem scale* (Rosenberg, 1965) was a weighted-average of a 10-item questionnaire (e.g., "I am a person of worth," "I am satisfied with myself"; α = 0.81) with four Likert scale response options of 1 ("*strongly disagree*"), 2 ("disagree"), 3 ("agree"), 4 ("*strongly agree*"). Also from wave 1, information about experience of *discrimination* (lifetime experience of perceived discrimination) and level of *depressive symptoms* (four-item CES-D measure; α = 0.73) were included as controls.

Analytic Strategy

The present chapter used propensity score stratification analysis (Rosenbaum & Rubin, 1984; Rubin, 1997) to address whether perceived discrimination may induce a small (adaptation hypothesis) or large (exacerbation hypothesis) increase in the levels of depressive symptoms among individuals who are most likely to have exposure to perceived discrimination.

The propensity score is the individual's unique predicted probability of experiencing perceived discrimination estimated by information from multiple observed personal and social attributes that constituted the youth (e.g., demographic, socioeconomic position, acculturative factors, and social support). As the propensity score encapsulates information from various observed personal and social attributes that

is reduced into a single figure, it can help distinguish youth who have the highest risk of exposure to perceived discrimination apart from those with the lowest risk of exposure.

This stratification procedure sub-classifies individuals into several groups based on their observed characteristics. Under the strongly ignorable treatment assignment assumption (Rosenbaum & Rubin, 1983), it may be plausible to assume that youths within each group are similar in terms of their unobserved characteristics, as well. Under these conditions, within each group, the difference in depressive symptom scores between youth who experienced perceived discrimination and those who did not can represent the change in mental health status that is attributable to the event of perceived discrimination. In sum, propensity score stratification methods can effectively address the motivation of the current study, which capitalized on the idea that the probability of perceiving discrimination is not random, but varies across individuals such that it may consequently result in differential mental health responses to perceived discrimination.

The current analysis involved a stepwise application of propensity score stratification methods (Brand & Xie, 2010; Rosenbaum & Rubin, 1984). First, the probability of experiencing perceived discrimination (propensity score) was estimated for each youth based on a function of various demographic, socioeconomic, acculturative, social support, and school characteristics (total of 38 covariates including interaction terms) using logistic regression. Second, youth were stratified into several groups according to their estimated propensity score. Third, the size of the relationship between perceived discrimination and depressive symptoms was computed for each separate stratum using negative binomial regression because there was a high concentration of individuals at the lower end of the depressive symptom scores distribution. Finally, this

chapter identified whether the relationship between differential exposure and response is consistent with the adaptation or exacerbation hypotheses.

RESULTS

Descriptive Statistics

This sample of youth of immigrants was from more than 34 different national origins, and comprised of Hispanic (35%), Asian (31%), Black (7%), White (14%), and multi-racial individuals (12%). There were an equal proportion of males and females, who were on average 17 years old. The majority of youth had lived in the U.S. for more than 10 years (86.7%) and was fluent in English (69.6%). In this sample, approximately 62.4 percent self-reported to have experienced perceived discrimination in their lifetime and 76.5 percent expressed feeling some levels of depressed moods in the past week.

In terms of exposure to perceived discrimination, the estimated probability of experiencing perceived discrimination ranged from 19.1 percent to 95.5 percent. Based on their propensity to experience perceived discrimination, youth were stratified into six groups. Youth in Stratum 1 were those with the lowest range of propensity scores, and thus had lower risks of exposure to perceived discrimination. On the other hand, youth in Stratum 6 were those with the highest values of propensity scores, and thus highest risks of exposure to perceived discrimination.

Within each group, youths who had experienced discrimination and those who had not were not statistically different in terms of observed characteristics (Table 1). However, *across* the six groups, there was a clear difference in the personal and social attributes that characterized individuals in the low-risk and high-risk groups (Table 2).

For example, low-risk youth (Stratum 1) were mostly female, White, Hispanic, high SES, fluent bilingual, U.S.-born, and had strong social support. The high-risk youth (Stratum 6), however, were mostly male, Asian, Black, low SES, limited bilingual, foreign-born, and had poor social support. These findings were consistent with existing research suggesting that male sex (Turner & Avison, 2003), racial minority status (Williams & Mohammed, 2009), low SES (Pearlin et al., 2005), low acculturation (Yu, Huang, Schwalberg, Overpeck, & Kogan, 2003) were associated with increased chances of exposure to discrimination.

Table 1. Balancing conditions by stratum ($N = 4,135$)

	Stratum 1			Stratum 2			Stratum 3			Stratum 4			Stratum 5			Stratum 6		
	Mean		p	Mean		p	Mean		p	Mean		p	Mean		p	Mean		p
	Dis=0	Dis=1		Dis=0	Dis=1		Dis=0	Dis=1		Dis=0	Dis=1		Dis=0	Dis=1		Dis=0	Dis=1	
Discrimination	0.66	0.34	0.00	0.56	0.44	0.00	0.45	0.55	0.00	0.35	0.65	0.00	0.24	0.76	0.00	0.15	0.85	0.00
Male	0.39	0.39	0.99	0.47	0.57	0.02	0.49	0.52	0.47	0.42	0.44	0.63	0.53	0.46	0.06	0.57	0.53	0.38
Age	17.17	17.17	0.98	17.14	17.15	0.89	17.23	17.19	0.59	17.25	17.23	0.87	17.15	17.17	0.74	17.22	17.22	0.93
Race																		
White	0.53	0.46	0.12	0.13	0.14	0.74	0.07	0.08	0.78	0.13	0.13	0.94	0.09	0.08	0.58	0.02	0.02	0.99
Black	0.00	0.00	1.00	0.02	0.05	0.15	0.07	0.07	0.87	0.06	0.05	0.80	0.06	0.05	0.55	0.17	0.19	0.61
Hispanic	0.36	0.39	0.47	0.50	0.47	0.44	0.41	0.43	0.59	0.42	0.44	0.63	0.37	0.37	0.91	0.15	0.12	0.29
Asian	0.02	0.03	0.41	0.21	0.22	0.81	0.33	0.31	0.51	0.32	0.32	1.00	0.33	0.37	0.30	0.57	0.54	0.50
Multi	0.09	0.12	0.27	0.14	0.13	0.82	0.12	0.12	0.81	0.08	0.07	0.43	0.14	0.12	0.41	0.10	0.14	0.15
Self-esteem (wave 1)	3.45	3.45	0.97	3.36	3.39	0.53	3.28	3.21	0.10	3.18	3.20	0.60	3.20	3.25	0.24	3.39	3.35	0.53
Dis. (wave1)	0.00	0.00	1.00	0.01	0.03	0.20	0.16	0.16	0.86	0.71	0.69	0.59	0.98	0.99	0.10	1.00	1.00	1.00
Depress (wave 1)	1.84	1.82	0.94	2.06	1.89	0.32	2.12	2.38	0.15	2.69	2.63	0.76	2.82	2.72	0.60	3.04	3.34	0.29
Language																		
Limited bilingual	0.11	0.09	0.51	0.17	0.16	0.76	0.19	0.21	0.46	0.22	0.25	0.42	0.18	0.19	0.75	0.30	0.28	0.62
Foreign lang. dom.	0.12	0.12	0.99	0.10	0.12	0.48	0.10	0.13	0.25	0.15	0.12	0.45	0.13	0.10	0.14	0.04	0.05	0.67
English dominant	0.29	0.36	0.09	0.42	0.43	0.65	0.45	0.41	0.33	0.41	0.36	0.25	0.45	0.46	0.76	0.54	0.55	0.91
Fluent bilingual	0.48	0.43	0.23	0.31	0.28	0.47	0.26	0.25	0.66	0.22	0.26	0.28	0.24	0.25	0.68	0.11	0.12	0.81
Time in US																		
All my life	0.55	0.52	0.44	0.46	0.50	0.36	0.49	0.43	0.17	0.42	0.42	0.99	0.45	0.49	0.35	0.44	0.42	0.66
10 years or more	0.37	0.38	0.76	0.41	0.35	0.20	0.38	0.35	0.44	0.38	0.43	0.23	0.39	0.38	0.92	0.42	0.48	0.28
5-9 years	0.07	0.09	0.56	0.12	0.13	0.59	0.12	0.18	0.05	0.16	0.12	0.22	0.15	0.11	0.15	0.10	0.10	0.91
Less than 5 years	0.01	0.02	0.40	0.01	0.01	0.93	0.01	0.04	0.02	0.03	0.02	0.25	0.01	0.02	0.71	0.03	0.00	0.00
Family																		
Family cohesion	4.05	3.98	0.29	3.79	3.70	0.20	3.58	3.57	0.83	3.63	3.71	0.36	3.58	3.62	0.59	3.19	3.16	0.78
Parent-youth confl.	1.25	1.30	0.13	1.54	1.52	0.65	1.87	1.87	0.96	1.60	1.67	0.28	1.83	1.76	0.21	2.25	2.32	0.24
SES	0.20	0.14	0.36	-0.02	0.04	0.29	-0.05	-0.07	0.71	-0.13	-0.16	0.58	0.03	-0.04	0.20	-0.26	-0.13	0.08
Two-parent family	0.66	0.62	0.39	0.68	0.67	0.80	0.61	0.63	0.61	0.65	0.66	0.81	0.64	0.68	0.26	0.69	0.63	0.25
School demographics																		
% Black	5.70	5.63	0.92	11.64	14.37	0.05	14.74	14.37	0.80	15.12	15.37	0.87	16.64	16.37	0.83	23.67	22.76	0.66
% Hispanic	76.96	77.24	0.90	53.39	54.11	0.80	43.96	42.38	0.56	45.10	45.32	0.93	39.23	38.47	0.74	26.43	24.30	0.26
% Asian	3.56	3.67	0.89	12.23	11.35	0.52	15.57	16.86	0.37	16.61	14.89	0.23	17.18	18.15	0.47	22.15	22.62	0.78
% White	13.70	13.37	0.81	22.68	20.04	0.10	25.63	26.29	0.69	23.07	24.29	0.45	26.83	26.89	0.97	27.71	30.20	0.16

Table 2. Descriptive summary of CILS by stratum (*N* = 4,135)

	Mean (or %)						p-value (Stratum 1 vs. Stratum 6)
	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Stratum 5	Stratum 6	
Male	0.39	0.51	0.50	0.43	0.48	0.53	$p < 0.001$
Age	17.17	17.15	17.20	17.24	17.17	17.22	0.26
Race							
White	0.51	0.13	0.07	0.13	0.08	0.02	$p < 0.001$
Black	0.00	0.03	0.07	0.05	0.05	0.18	$p < 0.001$
Hispanic	0.37	0.49	0.42	0.43	0.37	0.12	$p < 0.001$
Asian	0.02	0.21	0.32	0.32	0.36	0.54	$p < 0.001$
Multi	0.10	0.14	0.12	0.07	0.13	0.14	0.03
Self-esteem (wave 1)	3.45	3.37	3.25	3.19	3.23	3.36	$p < 0.001$
Discrimination (wave1)	0.00	0.02	0.16	0.69	0.99	1.00	1.00
Depress (wave 1)	1.83	1.98	2.27	2.65	2.74	3.29	$p < 0.001$
Language							
Limited bilingual	0.10	0.17	0.20	0.24	0.19	0.29	$p < 0.001$
Foreign language dominant	0.12	0.11	0.12	0.13	0.11	0.05	$p < 0.001$
English dominant	0.32	0.42	0.43	0.38	0.46	0.55	$p < 0.001$
Fluent bilingual	0.46	0.30	0.25	0.25	0.25	0.12	$p < 0.001$
Time in US							
All my life	0.54	0.48	0.46	0.42	0.48	0.42	$p < 0.001$
10 years or more	0.37	0.38	0.36	0.41	0.39	0.47	$p < 0.001$
5-9 years	0.08	0.12	0.15	0.14	0.12	0.10	0.12
Less than 5 years	0.01	0.01	0.02	0.02	0.02	0.01	0.74
Family							
Family cohesion	0.18	0.01	-0.06	-0.15	-0.02	-0.15	p<0.001
Parent-youth conflict	0.65	0.67	0.62	0.66	0.67	0.64	p<0.001
SES	4.03	3.75	3.57	3.68	3.61	3.17	p<0.001
Two-parent family	1.26	1.53	1.87	1.65	1.78	2.31	0.93
School							
% Black in school	13.59	21.50	25.99	23.86	26.87	29.82	$p < 0.001$
% Hispanic in school	5.68	12.85	14.54	15.28	16.44	22.90	$p < 0.001$
% Asian in school	77.05	53.71	43.10	45.24	38.66	24.62	$p < 0.001$
% White in school	3.60	11.84	16.28	15.50	17.92	22.55	$p < 0.001$

Test of Hypotheses

The next step of the propensity score stratification analysis involved estimating the association between perceived discrimination and depressive symptoms using negative binomial regression for each of the six groups (Table 3). Regression estimates were reported in both negative binomial coefficients and incidence rate ratios. Results from the analysis showed that among youth with low risk of stress exposure (Stratum 1), the increase in depressive symptoms was predicted to be 1.41 times greater for youth who experienced perceived discrimination compared to those who had not. On the other hand, youth in the high-risk group (Stratum 6) showed an increase in depressive symptoms by a factor of 1.14 for youth who experienced discrimination relative to those who did not experience discrimination. However, this coefficient was not significantly different from zero.

Table 3. Heterogeneous association between perceived discrimination and depressive symptoms

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Stratum 5	Stratum 6
Perceived Discrim.	0.343 ***	0.193 *	0.127 †	0.076	0.019	0.129
	(0.097)	(0.088)	(0.074)	(0.080)	(0.075)	(0.081)
Incidence Rate Ratio	1.41	1.21	1.14	1.08	1.02	1.14
n	586	596	600	598	931	819

Note: Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.10$ (two-tailed tests). Dependent variable is depressive symptoms score. Control variables are not reported. Each stratum met balancing conditions.

A graphical representation of the differences in depressive symptoms scores among youth who had experienced perceived discrimination and those who had not is provided in Figure 3. In Figure 3, the dotted line represents the patterns for high-risk youth (Stratum 6) and the solid line represents low-risk youth (Stratum 1). The relatively flatter dotted line (slope: 0.129), compared to the steeper solid line (slope: 0.343), indicates that youth who were more likely to experience perceived discrimination showed a smaller emotional response to the event of discrimination, which is consistent with the predictions of the adaptation hypothesis.

Figure 3. Support for adaptation hypothesis: Comparison between high-risk (Stratum 6) and low-risk youth (Stratum 1)
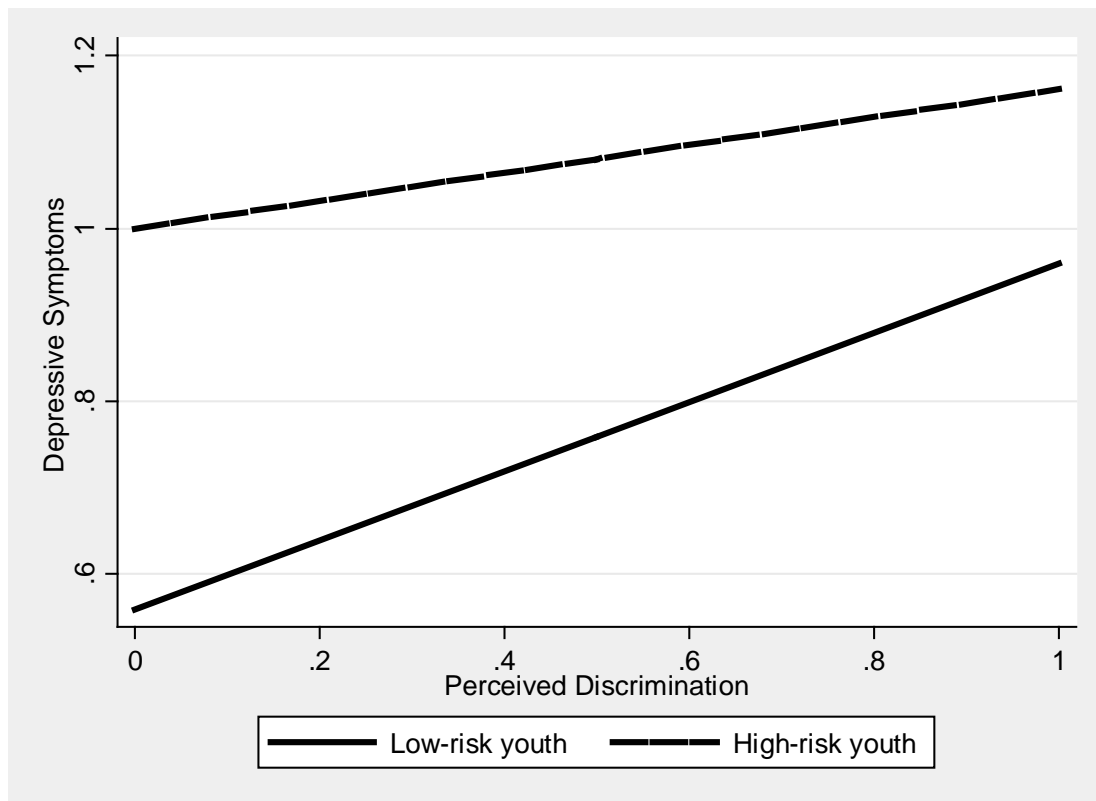
An alternative graphical representation of the heterogeneity in the association between perceived discrimination and depressive symptoms is to depict the relationship between stress exposure and stress response using information from all six negative binomial models (Figure 4). The best fitted regression line that goes through the six estimated coefficients had a significant downward slope of -0.044 ($p = 0.033$). This negative line characterizes the inverse relationship between exposure to discrimination and change in depressive symptoms score, which again suggests that youth in the sample show behavioral patterns that are consistent with the adaptation hypothesis.

Figure 4. Support for adaptation hypothesis: Identification of a linear trend of the exposure-response relationship

slope of linear trend (s.e.) = -0.044 (0.021)
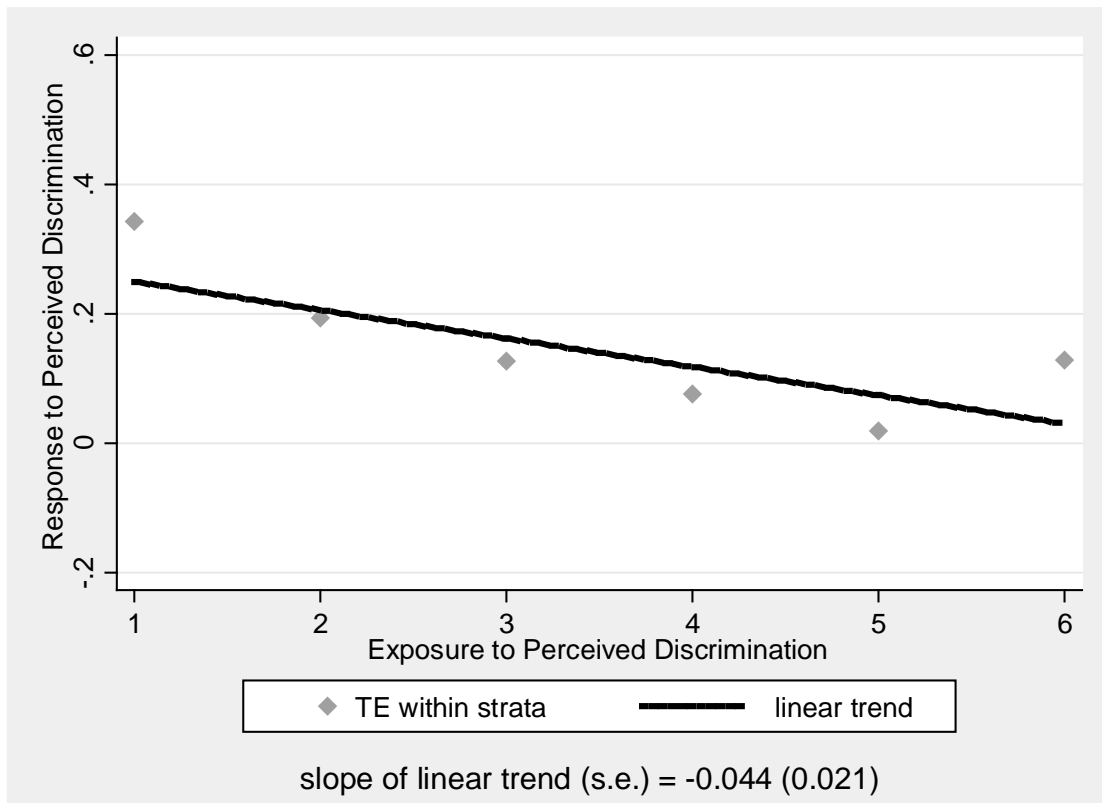
DISCUSSION

There is little debate about whether perceived discrimination is harmful for mental health, yet there is ambiguity regarding who is most resilient or vulnerable to the perilous effect of perceived discrimination on depressive symptoms (Williams et al., 2008). Using a convenience sample of first and second generation immigrant adolescents in the U.S., this study examined whether individuals who are most likely to be exposed to perceive discrimination show the greatest, or the smallest, increase in depressive symptoms.

This study presented empirical findings that support the adaptation hypothesis. Results from the propensity score stratification analysis showed that the fitted line representing the relationship between exposure to perceived discrimination and its mental health response was significantly negative (slope = -0.044; p = 0.021). This finding is in agreement with previous studies that have suggested that there may exist an inverse relationship between exposure to perceived discrimination and the increase in the level of distress (Borrell, Kiefe, Williams, Diez-Roux, & Gordon-Larsen, 2006; Kessler et al., 1999; Thoits, 2010). Individuals who were *more likely to experience perceived discrimination* (i.e., individuals who were characterized by a combination of personal and social attributes that can elevate the chance of exposure to perceived discrimination), *showed a small increase in their depressive symptoms* in the event of the stressful experience (IRR = 1.14). On the other hand, individuals who were *least likely to be exposed to perceived discrimination showed a large response* to perceived discrimination (IRR = 1.41). As such, analytical results from this study lent support for the plausibility of the adaptation hypothesis for explaining the relationship between exposure and

response to perceived discrimination among youth with immigrant backgrounds in the U.S.

However, it is important to note that the results from the current study that was consistent with the adaptation hypothesis are by no means suggestive of the idea that perceived discrimination is a trivial concern for first and second generation immigrant youth who have various personal and social attributes that expose them to very high risk of experiencing discrimination. On the contrary, these results highlight two important motivations for further examining perceived discrimination, depressive symptoms, and the relationship between these two areas among youth of immigrant families. First, although youth with high probabilities of exposure to perceived discrimination, compared those with low probabilities, elicited a smaller emotional response to perceived discrimination, their *absolute levels* of depressive symptoms were constantly higher (Figure 3). In other words, although the slope of the perceived discrimination and depressive symptoms relationship was flatter (thus, indicating that there was a smaller emotional response to perceived discrimination) for high-probability youth, the depressive symptoms score was always greater than that of low-probability youth. Thus, despite smaller *changes* in the depression scores, the absolute *level* of the depressive symptoms score was higher for high-probability youth. These results provide concrete justification for drawing attention towards this group of adolescents.

Second, the pattern of adaptation identified in this study all the more strongly incentivizes researchers and practitioners to pay greater attention to youth in the high-risk group and focus on delving into comprehending why resiliency to the harmful effect of the stressor may emerge. Identifying processes through which high-risk youth become

more resilient to the experience of discrimination can help understand why patterns of adaptation—or resiliency to the perilous effect of perceived discrimination—may occur. One possible explanation for why we may observe these patterns is that high-risk youth have developed strong coping abilities and readily know from where social resources can be obtainable. These high-risk youth who are systematically and routinely exposed to discrimination may have found ways to deal with a stressful situation such that the deleterious role of discrimination on depressive feelings is minimized. Future work that identifies what these specific coping strategies are (e.g., importance of racial and ethnic identity), or what type of social networks or capital (e.g., close friends who are of same race and ethnicity at school or neighborhood; presence of role model) youth rely on is warranted.

Another possible way to understand patterns of adaptation in the relationship between perceived discrimination and depressive symptoms is to focus on other various psychosocial domains through which stress may be released. Study results showed that the increase in depressive symptoms associated with the experience of perceived discrimination was lower among high-risk youth (Table 3, Figures 3 and 4). This may not be indicative of the idea that discrimination poses minimal harm to high-risk youth. Instead, this may be indicative of youth relying on alternative outlets such as aggression and substance use to release the distress caused by the stressful discriminatory event (Luthar & Cicchetti, 2000). Thus, additional research investigating the adaption and exacerbation models with regards to other areas of behavioral health outcomes can broaden our understanding of the detrimental effects of perceived discrimination among

adolescents of immigrant backgrounds, and further among various other populations who

likely to be affected by the experience of perceived discrimination.

Limitations

Several limitations must be considered for interpretation in light of the important

analytical findings. First, although the current chapter examined a general dichotomous

measure of youth's lifetime experience of perceived discrimination—which is the most

widely used measure that contains long-term exposure (Williams & Mohammed, 2009)—

it is important to recognize that differential emotional response to a stressor may also

depend on the frequency of the stressor, who the perpetrator is, and the severity of the

stressor. For example, the effect of discrimination by peers has been found to be more

detrimental to adolescent mental health conditions than that perpetrated by adults

(Greene, Way, & Pahl, 2006).   In this chapter, in the event that the source of perceived

discrimination is systematically different across youth with differential exposure to stress,

the size of the response to discrimination may be subject to bias. Additionally, if the

level of mistreatment between high-risk youth is systematically higher than that of low-

risk youth, then the pattern of adaptation in the exposure-response relationship identified

in this chapter would have been a manifestation of the differential severity of perceived

discrimination, and not coping mechanisms, resiliency, and adjustment.

Second, this chapter cannot make any strong causal statements about the link

between perceived discrimination and depressive symptoms because the temporal order is

unclear as both measures are from Wave 2. Examining the lagged effect of the perceived

discrimination measure from Wave 1 on the depressive symptoms score from Wave 2

seemed unrepresentative of reality, because these waves are three years apart. Findings of the analysis were strengthened compared to cross-sectional studies, however, by controlling for the potentially confounding effects of experience of perceive discrimination and depressive symptoms at Wave 1 by including these variables in the propensity score model and also the negative binomial model.

Finally, the chapters assumed that there exists a linear relationship between exposure to perceived discrimination and the mental health response to discrimination. Figure 4 shows that there is a general decreasing trend in the size of the response by stratum—the best fitted line had a negative significant slope of -0.044 ($p = 0.021$). However, as presented in Table 3 and Figure 4, it may possible that youth with the very highest risk of experiencing perceived discrimination (Stratum 6) may act in counter to the decreasing trend that is exhibited by the rest of the youth (Stratum 1-5). Thus, the next line of research would involve using non-parametric methods to explore the relationship between exposure to perceived discrimination and its heterogeneous response (e.g., Xie, Brand, & Jann, Forthcoming).

Implications and Conclusion

The ability for social programs to be sensitive to first and second generation immigrant youth, and effectively address their diverse unique experiences is crucial (Piedra & Engstrom, 2009). By exploring the possibility of adaptation or exacerbation in the experience of perceived discrimination among youth of immigrant backgrounds, this chapter may offer valuable implications for intervention. In using a multidimensional framework to assess youth resiliency or vulnerability to the harmful effect of

discrimination, this chapter identified patterns of adaptation in the perceived

discrimination and depressive symptoms relationship. Findings from the analysis may

highlight the importance of designing interventions that are tailored across youth who

may respond differently to stressors. Furthermore, future studies which confirm that

patterns of adaption is due to one's coping processes may lend support to facilitating

programs that promote successful coping and resilience-developing strategies as a

protective mechanism against the harmful consequences of perceived discrimination on

depressive symptoms.

Chapter 3

Differential Size of the Discrimination-Depression Relationship

Among Adolescents of Foreign-born Parents

INTRODUCTION

National statistics show that the proportion of all children (aged 0-17) in the U.S.

with at least one foreign-born parent has increased dramatically in recent years—from 15%

in 1994 to 23% in 2010 (King et al., 2010). This demographic shift may represent a boon

for the country, as these first and second generation immigrant children have the potential

to play a vigorous role in shaping the economic, social, and political landscape of the U.S.

in the near future. Yet a wealth of studies has shown that these children of immigrants

perceive discrimination in their daily lives and activities, to the extent that experiences of

discrimination constitute a major element in their everyday experiences (Kim, Wang,

Deng, Alvarez, & Li, 2011). It is thus crucial that researchers and practitioners attend to

the issue of discrimination and its correlates among this growing and potentially

vulnerable population.

The existing literature contends that daily experiences of perceived discrimination

are associated with maladaptive mental health outcomes among youth of various

immigrant backgrounds (Benner & Kim, 2009; Ellis, MacDonald, Lincoln, & Cabral,

2008; Kim et al., 2011; Portes & Rumbaut, 2001; Potochnick & Perreira, 2010; Suárez-

Orozco & Suárez-Orozco, 2001). Most of this literature's empirical studies using

conventional methodology have relied on a *single* average estimate to measure the

relationship between perceived discrimination and mental health outcomes across the

entire range of children of immigrants. While these studies have generated important

findings concerning the negative role of discriminatory experiences on youth's mental

health, the use of a single average estimate to assess associations between discrimination

and outcomes may fail to accurately capture the true nature of the distributional change in

the mental health outcomes that is associated with experience of discrimination.

Therefore, instead of estimating a single average relationship for an entire sample, this

paper employs an analytic method that is better suited for identifying how individuals

may understand and respond to their experience of discrimination differently, by

providing several sets of relationship estimates. Understanding such differences in the

magnitude of the association between perceived discrimination and mental health

outcomes can help identify ways to improve the wellbeing of youth of immigrant

backgrounds.

      Thus, in the following sections, this paper examines the possibility that there may

be variations in the size of the relationship between perceived discrimination and

psychological distress. It employs quantile regression to accommodate methodologically

the theoretical basis of the stress appraisal model. Quantile regression allows the

estimation of the difference in depressive symptom scores between individuals with

experiences of perceived discrimination and those without at various points along the

conditional depressive symptoms distribution. After presenting the results, this chapter

elaborates on the policy and practical implications of the findings.

BACKGROUND

Prevalence of Perceived Discrimination

Many U.S. adolescents of immigrant backgrounds have experienced discrimination in the form of unfair treatment (Portes & Rumbaut, 2001; Suárez-Orozco & Suárez-Orozco, 2001; Wang et al., 2011). Due to the absence of a nationally representative sample that contains information on perceived discrimination among first and second generation immigrant youth, we can only rely on community samples to evaluate the prevalence of discrimination. Nonetheless, these community studies reveal important findings that can potentially advance our understanding of the experiences of children of immigrant backgrounds. Several of these studies have reported that the vast majority of youth with immigrant background have experienced being treated unequally (e.g., Potochnick & Perreira, 2010; Suárez-Orozco & Suárez-Orozco, 2001), with one study of primarily Mexican descent adolescents reporting rates of perceived discrimination as high as 94% (Flores et al., 2010). In fact, the Harvard Longitudinal Immigrant Adaptation study of first generation immigrant youth has identified this hardship as the most difficult aspect of the experience of moving to the U.S.— particularly among those of Latin American and Caribbean origin (Suárez-Orozco & Suárez-Orozco, 2001). An overwhelming share of students from this study reported having experienced discrimination from mainstream Americans on the basis of negative perceptions of individuals from their country of origin. Stereotypical derogatory terms, such as "stupid, useless, garbage, gang members, drug addicts, job takers, non-existent," were often used to directly describe the immigrant youth studied (Suárez-Orozco &

Suárez-Orozco, 2001). In addition to experiencing such blatant expressions of discrimination, children of immigrants have also experienced more subtle forms of discrimination, including not being legitimately considered as a U.S. citizen and being treated as a perpetual foreigner (Kim et al., 2011).

Predictors of Depressive Symptoms

Generally, experiences of perceived discrimination have been shown to have ramifications for psychological distress and maladaptive health behaviors (Thoits, 2010; Williams et al., 2008). Of the various adverse health outcomes, feelings of being treated unfairly by others has been identified as having the strongest association with poor mental health, such as depressive symptoms (Williams et al., 2008). Children of immigrants are no exception to this pattern. Numerous empirical studies using cross-sectional and prospective data have underscored this strong link between perceived discrimination and negative psychosocial outcomes, like depressive symptoms, among youth of immigrant parents of various origins. This association has been confirmed by research among foreign born and U.S. born children of immigrant families from various racial and ethnic backgrounds (e.g., Benner & Kim, 2009; Ellis et al., 2008; Portes & Rumbaut, 2001; Potochnick & Perreira, 2010; Suárez-Orozco & Suárez-Orozco, 2001).

In addition to perceived discrimination, research has also considered various other types of strenuous life events that youth of immigrants may experience that are related to their depressive symptoms. The inclusion of such stressors is critical in understanding the relationship between perceived discrimination and feelings of depression, as they may

alter the meaning of discrimination or its relationship with one's mental health status (Gee, Spencer, Chen, Yip, & Takeuchi, 2007; Williams et al., 2008).

The literature on U.S. adolescents of immigrant backgrounds highlights several of these stressors— above and beyond those induced by perceived discrimination— that predict youth mental health. The first of these is *parent-youth conflict*. Research has shown that the properties of a well-functioning family are consistent and powerful indicators of youth's current and future outcomes across cultures (Rohner, Khaleque, & Cournoyer, 2005; Suárez-Orozco & Suárez-Orozco, 2001). Therefore, a family climate that lacks care and closeness can predict poor mental health conditions (Montazer & Wheaton, 2011). A second mental health-related stressor that has been widely acknowledged by the literature is *low family socioeconomic status* (Pearlin et al., 2005). Youths from immigrant families may have a disproportionately larger risk of experiencing economic hardship and downward social mobility in the host country, because their parents often acquire jobs for which they are overqualified due to language barriers and a lack of social networks (Suárez-Orozco & Suárez-Orozco, 2001). Thus poor socioeconomic circumstances may pose an additional set of risks in shaping the mental wellbeing of these youths (Tienda & Haskins, 2011). Finally, children of foreign-born parents can be exposed to acculturative stress—specifically, *dissonant acculturation*—a situation in which the speed of assimilation is much faster among youths, relative to their parents (Portes & Rumbaut, 2001; Rumbaut, 1994). The disparity between youth and parent in the acquisition of the host culture and maintaining the culture of origin can arouse distress, such as severe depression. As such, everyday challenges concerning the cultural distance between the youth and their parents may

explain the increasing prevalence of poor mental health conditions among first and second generation immigrant youth (Kim, Chen, Li, Huang, & Moon, 2009; Montazer & Wheaton, 2011).

As elaborated above, there are various strenuous life events that must be taken into consideration when attempting to identify the unique role of perceived discrimination in shaping depressive symptoms. Accordingly, the present study hypothesized that *the association between perceived discrimination and depressive symptoms would be robust even after accounting for the effects of other stressors—such as parent-youth conflict, low socioeconomic status, and dissonant acculturation—on depressive symptoms* (Hypothesis 1). The persistence of a strong significant relationship between perceived discrimination and depressives symptoms, even after taking into account various types of stressors that may induce hardships and conflicts in the daily lives of youth of immigrant backgrounds, will attest to the salience of this issue.

Differential Size of the Discrimination-Depression Relationship

As discussed above, the potentially perilous relationship between perceived discrimination and depressive symptoms among youth of immigrant backgrounds in the U.S. has been firmly established in the literature. The existing research, however, has generally estimated a *single* parameter with standard regression models (such as ordinary least squares) based on the conditional mean that only reflects the relationship for the *average* individual. Such relationship parameters that focus on the average individual may only provide limited information about the true nature of the discrimination-depression relationship, as it may differ across different points of distribution of

depressive symptoms conditional on various personal and social attributes. Especially because risk factors associated with very high levels of depression scores may be of central concern for practitioners and policy makers, it is crucial to employ analytical methods to examine the potentially wide range of the size of the discrimination-depression relationship.

In the study of perceived discrimination and depressive symptoms, however, what remains unclear is whether the size of this association is different at different parts of the conditional depressive symptom scores distribution, based on youth's demographic, socioeconomic, and interpersonal characteristics. The ability to detect variation in the size of the association between perceived discrimination and depressive symptoms is important, because a single measure that represents this association among average youth may potentially *understate* the adverse relationship—particularly among *high levels* of conditional depressive symptom scores. At the same time, a single measure of the average individual could *overstate* the association between perceived discrimination and depressive symptoms among *low levels* of conditional depressive symptom scores.

There is theoretical support for empirically examining whether (and to what extent) perceived discrimination is differently associated with different marginal changes on the distribution of depressive symptom scores conditional on various personal and social attributes. Stress appraisal theory (Cohen, Kessler, & Gordon, 1997; Lazarus & Folkman, 1984) focuses on the evaluative process by which individuals subjectively recognize or determine the extent of a taxing situation, and in turn, react *differently* to the stressor. According to this theoretical tradition, individuals may each engage in unique endogenous processes of perceiving the stressor, leading to differential psychosocial

responses, rather than presenting a common response to exogenous stressors (Monroe, 2008). Therefore, in the context of perceived discrimination and depression, the assumption that there are differences in the stressor-distress relationship is a plausible one, given the wide range of protective and risk factors that may lead to unique appraisals of, and response to, discriminatory events.

For youth of immigrant backgrounds, the overt and covert enactments of "psychological disparagement and symbolic violence" (Suárez-Orozco & Suárez-Orozco, 2001) that are embodied in discriminatory actions can clearly become a source of stress that may be associated with greater depressive symptoms. It is undoubtedly taxing and stressful to experience any kind of direct or indirect forms of discriminatory treatment on a regular basis (Turner & Avison, 2003). However, this stressful experience may also be very subjective and personal, and thus is subject to different interpretation and internalization processes across individuals with varying personal (e.g., age, gender, race, time in the U.S., self-esteem) and environmental (e.g., family relationships, family socioeconomic status, place of residence) characteristics. Furthermore, as individuals may ascribe various meanings to a given discriminatory experience, their subjective interpretations of discrimination may lead to differential responses to the stressful event.

As such, psychological models of stress appraisal may serve to explain how such different evaluations of experience of perceived discrimination can result in varying levels of psychosocial response. Based upon this theoretical framework, the study hypothesized that *the association between perceived discrimination and depressive symptoms would be greater for higher conditional depressive symptom scores, at which*

adolescents with greater risk of being depressed conditional on personal and

environmental factors may be concentrated (Hypothesis 2).

Contributions

In understanding differences in the magnitude of the association between stressors and distress, this study may contribute to the existing literature in three key respects. First, by examining adolescents with immigrant parents, it expands our knowledge of the health implications of perceived discrimination among a culturally diverse population. Second, by using quantile regression to identify the wide range of relationship sizes between perceived discrimination and depressive symptoms, this study may stand to present major substantive benefits for marginalized or clinical populations. The use of quantile regression presents a methodological advantage over conventional models that estimate the association for the average individual. Third, an empirical examination of the relationship between perceived discrimination and depressive symptoms can shed light upon whether perceived discrimination persists as a significant predictor of mental health amidst the effects of competing stressors of economic hardship, parent-youth conflict, and acculturative stress among youth from immigrant families.

METHODS

Sample

In order to investigate variation in the size of the stress-distress relationship among youth with immigrant backgrounds, this study used information from the Children of Immigrants Longitudinal Study (CILS) that surveyed adolescents from California (San

Diego) and Florida (Miami and Fort Lauderdale) in 1991-2006 (Portes & Rumbaut, 2008). Of the three waves of available information, this study primarily used information from the second wave ($N = 4,288$) and some measures from the first wave. In additional to the longitudinal nature of the dataset, an advantage of the CILS is the large sample size that contains both U.S.-born and foreign-born youth with diverse racial and ethnic backgrounds (e.g., Filipino, Vietnamese, Laotian, Cambodian, Korean, Japanese, Chinese, Cuban, Haitian, Jamaican, Nicaraguan, Colombian, Mexican, etc.) living with at least one foreign-born parent. Analyses were based on 4,113 youths who had complete information for all of the covariates used in this study.

Measures

The dependent variable of this study was *depressive symptoms*. It was the sum of four questions that asked about the individual's emotional condition in the past week on a Likert scale (0 – 3): "rarely," "some of the time (1-2 days)," "occasionally (3-4 days)," "most of the time (5-7 days)." The four questions are a subset of the original 20-item Center for Epidemiologic Studies Depression (CES-D) Scale (Radloff, 1977) and represented the depressed affect (e.g., "I felt sad," "I felt depressed") and somatic activity (e.g., "I could not get going," "I did not feel like eating") dimensions ($\alpha = 0.76$).

The primary independent variable (main stressor of interest) was self-reported lifetime experience of *perceived discrimination*. Youth who ever had the experience of perceiving discrimination were coded as "1," and "0" if otherwise. The lifetime experience measure is indicative of cumulative exposure (Williams & Mohammed, 2009) and has been used frequently in recent studies (Kressin, Raymond, & Manze, 2008).

Other independent variables were parent-youth conflict, socioeconomic status, and dissonant acculturation. *Parent-youth conflict* was the average of three questions (α = 0.69) that asked about the level of disagreement between the parent and youth (e.g., "My parents and I often argue because we don't share the same goals," "My parents are usually not very interested in what I say"). Each question had a four-item (1 – 4) response category of "Not true at all," "Not very true," "Partly true," "Very true." Measures of *socioeconomic status* (SES) included the SES index and family structure. The parent SES index was a standardized composite measure of parents' education, occupation, and home ownership developed by the original designers of the study (Rumbaut, 1994). Youths who lived with both a mother and a father (not necessarily biological parents) were assigned a "1" for the *two-parent family* measure and as "0" otherwise. *Dissonant acculturation* was represented by the degree of parent-youth discordance in preference for living the "American way," which represents an American cultural-orientation. This was coded as "1" for same level of orientation and as "0" for different levels of orientation.

Finally, regarding the control variables, *males* were coded as "1" and "0" if female. *Age* was measured in number of years. *Race* was coded as five dummy variables (White, Black, Asian, Latino, and multiracial). *Time in U.S.* was comprised of four dummy variables ("all my life," "ten years or more," "five to nine years," "less than five years") and indicated the time youth had spent in the U.S. at the time of the survey. Level of self-esteem was a weighted average of ten items (α = 0.83) based on the Rosenberg's self esteem scale (Rosenberg, 1965). *Depressive symptoms* (CES-D, α = 0.73) and *perceived discrimination* from wave 1 were also controlled for in the analysis.

Finally, the place of interview location was dummy-coded as Miami, Fort Lauderdale, and San Diego.

Analytic Strategy

Descriptive analysis was used to identify the prevalence of perceived discrimination and the level of depressive symptoms. Other background attributes of youths in the study sample were summarized. The main analyses involved using quantile regression to explore whether the magnitude of the perceived discrimination-depressive symptoms association was different across various quantiles of the distribution of depression symptoms, while controlling for various youth characteristics. Specifically, this analysis focused on examining the importance of perceived discrimination in predicting depressive symptom scores on the 25th, 50th, 75^h, and 90th percentiles of the conditional depressive symptoms distribution (Bassett, Tam, & Knight, 2002) and also investigated whether this discrimination-depression association had a upward trend across quantiles.

Quantile regression models have the advantage of responding to research questions concerning the different effect size of the explanatory variable on the outcome of interest along different points of the conditional distribution of the outcome (Koenker & Bassett, 1978; Koenker & Hallock, 2001). Therefore, quantile regression methods may permit a deeper understanding of the stressor-mental health relationships along different parts of the conditional distribution of poor mental health conditions, while also permitting the comparison of the size of this relationship across quantiles. Since this study does not rely on the rank preservation assumption (Djebbari & Smith, 2008;

Heckman, Smith, & Clements, 1997), quantile regression coefficients represent the different magnitudes of the marginal change in the distribution of conditional depressive symptom scores that is associated with the experience of perceived discrimination. This is subtly distinct from estimating the distribution of effect sizes of perceived discrimination on depressive symptoms across individuals with varying levels of conditional depressive symptom scores. Standard errors of the covariates were computed using 1,000 replications of the bootstrap procedure (Buchinsky, 1998).

RESULTS

Descriptive Summary

The study sample comprised a fairly balanced proportion of males and females who were on average 17 years-old (Table 4). About 86% of the sample youth had lived in the U.S. for 10 years or more and most were identified as Hispanic (36%) or Asian American (32%). On average, the sample youth came from families of relatively more advantaged socioeconomic positions compared to the national average in terms of parental education (57% had completed college education), homeownership (63% owned a home), and family composition (76% were two-parent families). Some youth (37%) reported different levels of orientation towards an American way of thinking.   The sample mean of the depressive symptoms scale was 2.64, and 76% of the sampled youth reported at least some level of depressive symptoms in the past week.

Table 4. Descriptive summary of CILS youth (*N* = 4,113)

Variables	Mean	Standard Deviation	Range	
Mental Health				
Depressive symptoms	2.64	2.56	0	12
Depressive symptoms (wave 1)	2.53	2.47	0	12
Self-esteem	3.41	0.51	1	4
Stressors				
Discrimination	0.62	0.48	0	1
Discrimination (wave 1)	0.55	0.50	0	1
Parent-Youth conflict	1.77	0.71	1	4
Socioeconomic status	-0.04	0.76	-1.66	2.09
Parental education[a]	4.47	1.54	1	6
Home ownership[b]	0.63	0.48	0	1
Two biological parents	0.76	0.43	0	1
Difference in American preference	0.37	0.48	0	1
Controls				
Male	0.48	0.50	0	1
Age	17.19	0.85	15	21
Race				
Black	0.07	0.26	0	1
Hispanic	0.36	0.48	0	1
Asian	0.32	0.47	0	1
Multi	0.12	0.32	0	1
White	0.14	0.35	0	1
Time in the U.S.				
All my life	0.46	0.50	0	1
Ten years or more	0.40	0.49	0	1
Five to nine years	0.12	0.32	0	1
Less than five years	0.02	0.13	0	1
Location				
Miami, FL	0.47	0.50	0	1
Fort Lauderdale, FL	0.05	0.22	0	1
San Diego, CA	0.49	0.50	0	1

Note: [a] Summary statistics based on *n* = 3,955
      [b] Summary statistics based on *n* = 4,085

Quantile Regression Analysis

Quantile regression results showed that the association between perceived discrimination and depressive symptoms was significant, but that there was substantial difference in the size of the stressor-response relationship along the conditional depressive symptoms distribution (Table 5). Furthermore, experience of perceived discrimination was related to elevated levels of depressive symptoms in higher quantiles, and was greatest in the 90th percentile—even when controlling for other confounding stressors such as lack of parent-youth cohesion, low SES, and acculturative stress. For example, the estimated coefficients for the 25th, 50th, 75th, and 90th percentiles were, 0.191 (p = 0.001), 0.185 (p = 0.020), 0.276 (p = 0.016), and 0.670 (p = 0.001), respectively. This indicated that in the 90th conditional quantile, the experience of perceived discrimination was associated with having a higher depressive symptom score by 0.670 points, after accounting for other stressors and control variables.

Although a difference in depressive symptoms score by 0.670 points may seem relatively small considering the range of possible effect sizes, the perceived discrimination coefficient in the 90th quantile was still statistically different from that of other quantiles. In detail, estimates of the perceived discrimination coefficient computed from the 25th and 90th quantile functions were statistically different (p = 0.011). Similarly, the size of the perceived discrimination coefficient in the 50th and 75th quantiles was statistically different from that of the 90th quantile (p = 0.009 and p = 0.016, respectively). As such, perceived discrimination was a strong, and increasingly large, predictor of mental distress along the middle to higher range of the conditional depressive symptoms distribution.

Table 5. Quantile regression results ($N = 4{,}113$)

Variables	25% Coefficient	Standard Error		50% Coefficient	Standard Error		75% Coefficient	Standard Error		90% Coefficient	Standard Error	
Discrimination	0.191	0.060	**	0.185	0.079	*	0.276	0.114	*	0.670	0.192	**
Family Integration												
Parent-youth Conflict	0.344	0.071	***	0.568	0.076	***	0.673	0.080	***	0.748	0.149	***
Dissonant Acculturation												
Difference in American Orientation	0.098	0.059	†	0.056	0.077		0.133	0.110		-0.093	0.181	
Socioeconomic Status												
Two biological parents	-0.038	0.080		-0.153	0.097		-0.335	0.128	**	-0.831	0.234	***
SES index	0.136	0.045	**	0.112	0.054	*	0.210	0.074	**	0.225	0.137	
Other												
Male	-0.412	0.057	***	-0.609	0.081	***	-0.862	0.113	***	-0.881	0.178	***
Depressive symptoms (wave 1)	0.134	0.019	***	0.241	0.024	***	0.262	0.034	***	0.280	0.038	***
Self-esteem	-1.146	0.097	***	-1.751	0.104	***	-2.251	0.120	***	-2.488	0.198	***
Constant	3.890	0.721	***	6.405	0.910	***	9.125	1.131	***	10.194	2.081	***
Pseudo R^2	0.130			0.176			0.205			0.211		

Note: † $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Figure 5. Perceived discrimination-depressive symptoms association across quantiles (by 5% increments)
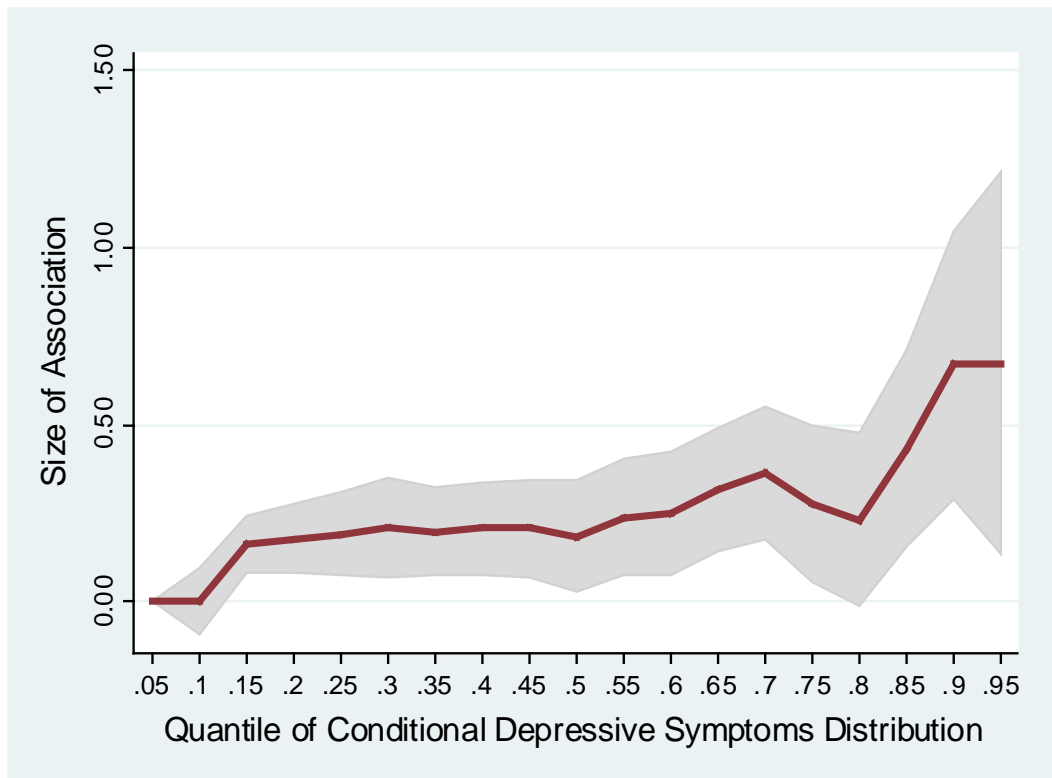
A graphical representation of the variation in the discrimination-depression relationship with 5% increments in the quantiles across the conditional depressive symptoms distribution is depicted in Figure 5. The upward sloping line (bounded by 95% confidence intervals) clearly represented the increasing trend in the size of the perceived discrimination coefficient across quantiles. This trend cannot be shown in a study using only one estimate to describe the relationship between perceived discrimination and depressive symptoms.

Other indicators of potentially stressful life situations concerning family relationships, socioeconomic resources, and acculturation processes showed meaningful results. Parent-youth conflict was consistently a strong predictor of depression across the different percentiles ($p < 0.001$). Similar to the effects of perceived discrimination, the

role of *parent-youth conflict* on mental health status for adolescents was different along the conditional distribution of depressive symptoms while accounting for other covariates. The magnitude of the parent-youth conflict coefficient was smallest in the 25th percentile and greatest in the 90th percentile. For example, a one unit increase in the parent-youth disagreement scale was associated with a 0.344 unit increase in depressive symptoms in the lower end of the conditional depressive symptoms distribution, but the harmful effect of parent-youth disagreement was greatest in the highest end of the distribution, with a 0.748 unit increase in the conditional depressive symptoms scale. Therefore, results from the quantile regression analysis suggested that the negative role of parent-youth disagreement on youth's depressive symptoms was greatest in the upper quantiles of the distribution. However, the standardized *socioeconomic status index* was significantly related to higher levels of depressive symptoms when controlling for other stressors, demographic, and psychosocial measures across the quantiles for the 25th, 50th, and 75th quantiles, but not for the 90th quantile. Living with *both parents* significantly predicted higher mental health outcomes in the 75th and 90th quantiles only. For *acculturative stress*, difference in the American cultural orientation between the parent and youth did not have a significant relationship with depressive symptoms—there was an indication of a trend at the 25th quantile.

As for the control variables, being female was a significant predictor of greater depressive symptoms. Self-esteem and past assessments of depressive symptoms were also strong predictors of current depressive symptoms. Similar to other covariates, the effect of these measures on psychological distress was greatest in the higher quantiles, compared to lower quantiles. However, age, race, time spent in the U.S., previous

experience of perceived discrimination, and region were not statistically significant

predictors of depressive symptoms across the quantiles when controlling for other

covariates.

DISCUSSION

Using a diverse sample of first and second generation adolescents from families

of immigrant parents residing in California and Florida, this study found that the vast

majority of these youths reported having experienced some level of depressive symptoms.

At the same time, over half of the youth in this study had experienced perceived

discrimination at least once during their lifetimes—and these experiences were closely

tied to greater depressive symptom scores. Furthermore, there was empirical support for

the expectation that the magnitude of the association between perceived discrimination

and depressive symptoms would vary across the conditional distribution of the risk of

developing depressed moods. A detailed discussion of these findings and their

implications, while noting some limitations of the study, is elaborated below.

Perceived Discrimination is Important, Despite Competing Stressors

In the literature on stressors and distress, some investigators have cast doubt on

the validity of perceived discrimination as an independent stressor predictive of mental

health conditions, since existing studies of the topic have failed to consider a

comprehensive set of stressors when investigating the discrimination-depression

relationship (Williams et al., 2008). In light of these concerns, this study confirmed the

first research hypothesis by finding that the harmful relationship between perceived

discrimination and depressive symptoms persisted even when taking into account

competing stressors—such as poor family relationships, economic hardship, and

acculturative stress—present in the lives of high school-aged adolescents from immigrant

families. Therefore, in accordance with the findings of Gee and colleagues (Gee et al.,

2007), this study was able to lend support to the assertion that the experience of perceived

discrimination stands out as a unique and independent stressor. Study results suggested

that although perceived discrimination may be closely related to other stressors—such as

lack of parental support, economic hardship, and differential speed in adjusting to the U.S.

between youth and parent—it is not a mere proxy for these stressors. Rather, the

significant perceived discrimination coefficient indicated that perceived discrimination

may play an independent role in structuring the mental health conditions of first and

second generation immigrant adolescents.

Marginal Change is Greatest for Highest Conditional Depressive Symptom Scores

        Not only was the relationship between perceived discrimination and depressive

symptoms significant, but the deleterious link was greatest in the higher end of the

conditional distribution, where adolescents with the highest risk of being depressed

(conditional on their demographic, socioeconomic, and interpersonal characteristics) may

be concentrated. As such, the results of this study confirmed the second hypothesis.

Findings from this study were consistent with the theoretical assertion that different

personal and environmental attributes may lead to various degrees of marginal change in

conditional depressive scores associated with perceived discrimination. (Cohen et al.,

1997; Lazarus & Folkman, 1984). A clear representation of the increasing size of the

discrimination-depression relationship coefficient in the quantile regression models was depicted in Figure 5.

The magnitude of the relationship between perceived discrimination and depressive symptoms on the 90th percentile of the conditional depressive symptoms distribution was greater than that of the estimate on the 50th percentile by more than threefold ($p = 0.009$). As illustrated in the upward-sloping graph representing the increasing trend in the size of the discrimination-depression relationship (Figure 5), robust coefficients for the discrimination measure in multiple quantile functions lend support to the theoretical model that underscores the potentially different change in mental health outcomes associated with a stressful event (Cohen et al., 1997; Lazarus & Folkman, 1984). This implies that a single relationship measure that focuses on the *average* individual would have provided a poor estimate of the perceived discrimination-depression relationship by *understating* its potential harm in the higher end of the conditional depressive symptoms distribution, while *overstating* the relationship size in the lower end, compared to more *normative* levels of risk for mental health concerns. As such, this study was able to capture the variation in the size of the discrimination-depression relationship along different points of the conditional distribution of depressive symptom scores that would otherwise have been undetected using methodological approaches focusing only on the average.

Family Relationship Plays a Large Role in Youth Mental Health

Finally, results from the analysis suggested that, in addition to perceived discrimination, various stressors that were embedded in the daily lives of youth with

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immigrant parents were significant predictors of their mental wellbeing. Among all of the competing stressors, measures concerning parent-youth conflict consistently maintained a robust association with depressive symptoms across quantiles. That being said, although examining the effect of parent-youth disagreement on the youths' mental wellbeing was not the central interest of the present study, these results may be worth further discussion because no other stressor (apart from perceived discrimination) had such a strong association that persisted across all quantiles. Results from the analysis showed that the harmful role of parent-youth conflict was greatest in highest levels of the conditional depressive symptoms distribution. By highlighting the importance of parent-youth cohesion, this study may provide strong support for an ecological approach to intervention programs for youth of immigrant backgrounds.

Limitations

As elaborated above, the current study may permit a deeper understanding of the stressor-distress relationship by identifying the variation in the size of the relationship between perceived discrimination and depressive symptoms across adolescents from families of foreign born parents. Some important limitations, however, must be taken into consideration when interpreting the study results.

First, there may be concerns with the operationalization of the perceived discrimination measure. The study used a binary measure of perceived discrimination that represented lifetime experience of ever feeling discriminated against (experienced perceived discrimination vs. did not experience perceived discrimination), which does not represent any degree of continuity or repetitiveness of the stressful event. Therefore, this

binary measure of perceived discrimination makes an unrealistic assumption that the effect of one discriminatory experience on an individual's mental health is equivalent to that of repeated incidences of perceived discrimination and it cannot capture the exact timing of the discriminatory event in the life course. Thus, future studies that examine the dose-response of perceived discrimination on mental health outcomes to test whether exposure to different levels and timing of discrimination are related to different psychosocial response can enhance our understanding of this relationship (Kessler, 1997; Williams et al., 2008). For example, in a study of perceived discrimination and smoking behavior among African and Hispanic American youth, a dose-response was detected between the number of discriminatory social settings and the amount of cigarette smoking (Wiehe, Aalsma, Liu, & Fortenberry, 2010). In this sense, greater exposure to discrimination may elicit a large mental health response from discrimination due to stress overload, or on the contrary, may elicit a small mental health response because individuals have developed a sense of mastery or coping strategies as a result of the repeated experience of discriminatory events (Thoits, 2010).

Another potential limitation concerns the self-reported information used for this study. Critics may argue that the different effect sizes of perceived discrimination across the conditional depression distribution are merely an artifact of measurement error in self-reported information, and that the standard measure of perceived discrimination based on retrospective self-reports are generally poor indicators of reality (Pascoe & Smart Richman, 2009). For example, some have asserted that self-reported perceived discrimination can be contaminated because it is not based on objective assessments or the actual intent of the prosecutor. For instance, racial minority members may

misinterpret race-neutral behaviors by others and misattribute them to discrimination. However, there are well-established theoretical models, such as the stress appraisal model employed in this study, that capitalize on individual's subjective evaluations and personal recollections of a stressful event (Lazarus & Folkman, 1984). In fact, in support of this theoretical framework, some researchers have claimed that even experiences that are not truly discriminatory in an absolute or objective sense, may still have substantively meaningful negative effects on one's psychological state if they are interpreted as such (Monroe, 2008). In line with this view, other scholars have asserted that the subjective judgment of a stressful event, more than objective events, can be considered the most important piece of information in the study of perceived discrimination on an individual's wellbeing because even the same objective events can be evaluated differently and consequently have different effects across individuals (Kressin et al., 2008).

A general limitation for studies concerning the topic of stressors and responses is the inability to establish a causal direction and effect (Kessler, 1997); and the present study is also subject to this limitation. Only randomized experiments or, to some extent, prospective longitudinal studies can make strong causal inferences regarding the effect of perceived discrimination on depressive symptoms (Kessler, 1997). The purpose of this study, however, was not to establish unidirectional causality. Rather, it relied on a theoretical model that highlights the simultaneous endogenous processes linking the stressor with psychological distress, and further investigated possible variation in the size of this relationship. Moreover, given that cross-lag models have provided empirical evidence for an endogenous process, where experiences of perceived discrimination affects youth outcomes, and in turn, youth outcomes lead to the identification of

discriminatory experiences (e.g., Brody et al., 2006), this study that concerns internalized processes in the link between perceived discrimination and depressive symptoms may still make a contribution to the literature.

Implication and Conclusion

These limitations notwithstanding, the findings from the current analysis have significant implications for practitioners and policy makers interested in understanding strenuous life conditions and their correlates among the most vulnerable populations. First, they provide more detailed information about the relationship between perceived discrimination and depressive symptoms than what has been offered in extant analyses relying solely on clinical samples or normative groups of youth of immigrant background in the United States. Second, the current study is able to compare the size of the marginal change associated with perceived discrimination along various points of the conditional depressive symptoms distribution, which is often difficult when trying to compare results from different samples and studies. Third, the detailed assessment of the size of the relationship between perceived discrimination and depressive symptoms may encourage the targeting of resources to first and second generation immigrant youth with various demographic and socioeconomic backgrounds and varying risks of developing poor mental health conditions. Future studies that build on the findings presented here can aid in identifying more precisely the most important points of intervention for adolescents from diverse backgrounds.

<center>**Chapter 4**</center>

<center>**The Role of Family- and Community-Level Social Capital**

on the Onset of Health-Risk Behaviors among Korean Youth</center>

INTRODUCTION

Health-risk behaviors represent behaviors that may directly or indirectly contribute to conditions of mortality or morbidity. Examples of health-risk behaviors include substance use (e.g., cigarette smoking, alcohol consumption), externalizing behaviors (e.g., aggression, rule breaking), and unsafe sexual activities (e.g., unprotected intercourse, prostitution). From a life course perspective that claims that an individual's outcome is contingent upon historical contexts (Elder, 1998), these health-risk behaviors that are developed earlier in life but left to proliferate, may evolve into even greater long-term consequences through the accumulation of disadvantaged conditions over time. In support of this theoretical framework, empirical evidence has shown that substance use behaviors and externalizing behaviors that are formed during adolescence may continue onto adulthood or manifest into other dimensions of problem behaviors and mental disorders (Merikangas et al., 2010). Thus, it is imperative to detect and resolve these undesirable health-risk behaviors early on, as a successful transition from adolescence to adulthood is largely contingent upon youth's daily experiences.

Although it is well understood that parents play a large role in the socialization process of adolescents (Galambos, Barker, & Almeida, 2003; Hair, Moore, Garrett, Ling, & Cleveland, 2008), youth are not affected by parents alone. Along with family resources and parenting strategies, relationships within the community may also provide macro-contexts in which youth are socialized (Simons, Lin, Gordon, Brody, & Rand, 2002). The literature has provided several theoretical arguments concerning family- and community-level socialization processes with respect to youth outcomes. Of these, the current study investigated the theoretical underpinnings of an informal relational resource called social capital in the context of South Korea (or Korea).

South Korea provides an excellent context to examine the role of such informal protection mechanisms that are embodied within the family and community. Despite the availability of extensive *formal* legislation that is designed to protect youth from engaging in health-risk behaviors, recent national reports have indicated that underage substance use, extreme forms of aggression, and unsafe sexual activities are yet widely prevalent (MOGEF, 2010). Thus, this situation calls for the need to explore ways in which social capital—an *informal* relational resource embedded in the family and community—may contribute to preventing Korean youth's involvement in health-risk behaviors.

This chapter first discusses how social capital within family and community structures may prevent youth from engaging in health-risk behaviors from a theoretical and empirical basis. The chapter then identifies whether such informal relational mechanisms within the family or community can effectively protect against the onset of

various forms of behavioral health outcomes among adolescents in South Korea, and further discusses the implications of the research findings.

BACKGROUND

Social Capital and Social Control

Social capital represents the idea that individuals may accrue benefits by participating as a member of social structures (Portes, 1998). Extant research has widely adopted this concept to examine the correlates of positive wellbeing among youth populations (Ferguson, 2006). Initially, it was Coleman (1988) who used the idea of social capital for understanding youth actions within the context of social interactions with the family and community. Coleman (1988) defined social capital as a type of resource that is represented by social relationships and contains the ability to facilitate behaviors of actors who are embedded within the social structure. Particularly, in social structures with closure, social capital can provide a "set of effective sanctions that can monitor and guide behavior (Coleman, 1998, p.107)." Thus, social capital that is rendered in informal family and community structures may become a source of social control and rule enforcement that governs youth actions (Portes, 1998). This functional aspect of social capital (i.e., a relational resource for exercising informal control mechanisms) distinguishes it from the more general idea of social support, which is broadly considered as "resources provided by other persons" (Cohen & Syme, 1985). Thus, given these types of informal social mechanisms, social capital generated from the family and community can be an effective resource for protecting youth against the

development of maladaptive health behaviors. A detailed description of the family and community processes is provided in the following sections.

Social Capital within the Family: Parental Monitoring

The key property of social capital within the family is the embodiment of *relations* between parent and youth (Coleman, 1988). This relational aspect of social capital is what distinguishes it from other forms of capital in the family, such as financial capital (e.g., family wealth and income) and human capital (e.g., parental education) that are critical for shaping youth outcomes. Although a wealth of studies have found that socioeconomic resources and youth outcomes are related (although not as strongly linked as in adulthood) (Hanson & Chen, 2007), research has also shown that various forms of parent-youth interaction can play an equally distinct role in shaping youth wellbeing (Galambos et al., 2003; Hair et al., 2008; Han & Grogan-Kaylor, 2012; Simons-Morton, 2005). Thus, among the constellation of family factors that may be associated with youth health-risk behaviors, an examination of parental practices that represent the relational aspect of social capital may be crucial for understanding youth outcomes, above and beyond socioeconomic and demographic measures.

An excellent example of a parenting practice that utilizes informal relational resources as a means of directing and guiding youth behavior is parental monitoring. Parental monitoring is defined as parental awareness of youth's whereabouts and activities, and is considered a parenting strategy based on communication and information-sharing between the parent and youth (Stattin & Kerr, 2000). In this sense, parental monitoring is a form of parental effort that facilitates parent-youth interaction

and encourages youth to internalize prosocial standards, which consequently can protect them from engaging in risk behavior during adolescence. In detail, when parents have better knowledge about youth's activities, parents can take preventive measures to reduce the chance of their offspring from developing undesirable behavior at an early stage in life (Guilamo-Ramos, Jaccard, & Dittus, 2010; Stattin & Kerr, 2000). In fact, numerous studies have repeatedly documented that higher levels of parental monitoring strongly predicts lower levels of adolescent substance use, aggression, rule-breaking, and early sexual behavior (e.g., Beyers, Bates, Pettit, & Dodge, 2003; Fletcher, Steinberg, & Williams-Wheeler, 2004; Sanchez, Grogan-Kaylor, Castillo, Caballero, & Delva, 2010; Simons-Morton, 2005).

Social Capital within the Community: Collective Efficacy

In addition to the family, the community is another domain that can partake in youth socialization through informal governing mechanisms. Coleman (1988) claimed that resource-rich social relationships that are developed at the larger community level, through shared parenting responsibilities across community members within the neighborhoods, may positively influence youth outcomes. In detail, collective socialization processes that take the form of supervision and management at the community level may be an alternative source of social capital that contributes to preventing youth engagement in undesirable behaviors. These relational processes are distinct from objective neighborhood conditions. Structural neighborhood qualities (e.g., percentage of married families and average level of family income in the neighborhood) have been proven to have a significant influence over shaping youth outcomes (Song et

al., 2009). However, because objective neighborhood conditions can only partially

explain the relationship between youth outcomes and community characteristics, it is

necessary to examine more direct processes, as well (Leventhal & Brooks-Gunn, 2000).

One example of a direct process is collective efficacy. Extending Coleman's idea

of social capital, Sampson and colleagues (1999) introduced the concept of collective

efficacy and provided a detailed account of how mutual engagement by adults to manage

youth within the community can be a critical aspect influencing youth development.

Collective efficacy is defined as "social cohesion among neighbors combined with their

willingness to intervene on behalf of the common good" (Sampson, Raudenbush, & Earls

1997, p. 918) and can be an effective relational resource that contributes to shaping youth

wellbeing. The basic premise of this idea is that a common desire to live in a safe and

orderly environment based on mutual trust and social cohesion will enable residents to

take action in informally and voluntarily achieving public order. In detail, when

communities coordinate active discussions and share knowledge about parenting

strategies, or willingly and collectively monitor youth, communities may provide additive

resources that are distinct from structural neighborhood conditions and protect youth

from engaging in health-risk activities.

South Korean Context

As elaborated above, there exists a strong theoretical and empirical literature base

that discusses the protective role of social capital within the family and community

against the development youth health-risk behaviors. However, the vast majority of this

field of research has been examined in the North American context. Examining Korean

youth may contribute to enhancing our knowledge concerning this area of inquiry in an international context.

A thorough examination of the protective role of social capital may be especially pertinent to the present Korean context. Underage youth alcohol consumption and smoking has been a widespread national health concern since 1990s (Hong et al., 2011). Despite legislative efforts to protect and prevent underage substance use through the Juvenile Protection Act in 1999 (MOGEF, 1999), a recent national study found that a large fraction of youth in middle-school and high school reported having consumed alcohol (51.9%) and smoked cigarettes (18.7%) in their lifetime (MOGEF, 2010). Youth aggression towards others in forms of bullying and harassment that frequently results in peer victimization has also been a severe public health concern in Korea, such that in 2009 a national provision (Act on the Prevention of and Countermeasures against Violence in Schools) to prevent bullying on school grounds was established (MOEST, 2012). Yet, according to national reports, 12.4% of youth identified as having exerted aggression toward other students at school in the past year (FPYV, 2009). Among these youth, approximately half were involved in school bullying in more than one incident. Running away from home has also been a serious social problem. Results from a recent national study indicated that about 8-12% of Korean youth (middle and high school students) experienced running away from home and 46-51% had considered running away from home in their lifetime (Paek & Bang, 2009). Finally, a recent national study found less than 40% of sexually active youth use some form of contraception. Also, 11-14% of sexually active adolescents (13-18 year olds) ended up having unwanted pregnancies, and further, about 80-85% of these pregnancies were terminated by abortion

(Lee, Choi, Cha, Park, & Lee, 2010). Every single one of these youth behavioral health

outcomes merit attention from practitioners and policy makers, particularly since these

health-risk behaviors often occur together or create opportunities for developing other

types of undesirable behaviors (MOGEF, 2010; Rhee et al., 2007).

High prevalence of youth health-risk activities and consequent social issues has

raised the concern that *formal* national legislative efforts alone in preventing these

activities are not sufficient. Thus the need to identify alternative *informal* mechanisms

that can effectively protect Korean youth from engaging in undesirable health behaviors

is called for. In other words, for effective prevention of youth health-risk activities,

legislations that mostly focus on the responsibility of public agencies (e.g., schools) or

commercial entities (e.g., business and service sector) in protecting youth from engaging

in various forms of undesirable behaviors may need to be accompanied by informal

family and community efforts as well.

In response, there has been a recent surge in emphasizing the role of family- and

community-level relational resources that are associated with various youth outcomes.

Although not many, there have been some studies that consider both informal family- and

community-level processes in predicting health-related youth outcomes. For example,

one recent study examined the effect of community-level capital on multiple domains of

youth outcomes using the Korean National Survey of Children and Youth data (Lee et al.,

2010). This study found that community-level social capital (a comprehensive measure

that was conceptualize as social control, cohesion, and bonding) had a significant

relationship with youth self-reported health, but not with externalizing behaviors.

Family-level capital, on the other hand, was a significant predictor of both externalizing

behaviors and self-reported health. Another study that analyzed the Korean Youth Panel

Survey reported that only family social capital—not community social capital—predicted

the combined frequency of smoking, drinking, unexcused absence from school, and

running away from home (Lee & Kong, 2010).

Contribution and Research Questions

As provided in the examples above, literature has documented the role of family-

and community-level social capital in relation to health-risk activities among Korean

adolescents. Of the few studies that examine the issue of social capital among Korean

youth, the primary focus has been on identifying factors that are associated with the

prevalence or frequency of various health-risk behaviors. However, for preventive

intervention strategies, it is crucial to acquire knowledge about various factors that

protect against the *onset* of health-risk outcomes. Despite the need for this type of

research, most existing studies have not accounted for social relationships that are linked

with first time initiation of health-risk behaviors. In-sum, previous studies relied on

cross-sectional data or used analytic methods that were limited in the ability to capture a

dynamic set of individuals who were differently exposed to the risk of engaging in

various activities throughout different time intervals.

To fill this gap, the current chapter uses longitudinal information and event

history analysis to examine how social capital at the family- and community-levels

contributes to preventing or stalling the *onset* of risky activities among Korean

adolescents. Specifically, this chapter hypothesizes that family- and community-level

social capital are each associated with the delay in the onset of various types of undesirable health-risk behaviors among Korean youth.

METHODS

Data

Analyses were conducted with a merged dataset that combined information from the nationally representative Korea Youth Panel Survey (KYPS; years 2003-2008) and the Korean Population Census (years 2000, 2005, 2010). Conducted by the National Youth Policy Institute in Korea, the KYPS sampled 3,449 second-year middle school students and their parents in 2003 (Wave 1) and followed these individuals for six consecutive years until 2008 (Wave 6). The respondents of this nationally representative survey were identified using stratified multi-stage cluster sampling from 12 metropolitan cities and provinces in Korea. This prospective six-wave panel survey contained information on behavioral health outcomes, youth demographics, family SES and parenting variables, and neighborhood conditions.

One of the many advantages of the KYPS is that in Wave 1, youth were asked to provide retrospective information about their first-time health-risk behaviors that occurred prior to the survey. Respondents were asked to identify their first health-risk behavior (among fourteen different types), and the age of first-time involvement in the event. This information permits the current study to utilize retrospective information from years prior to Wave 1, in addition to the six waves of prospective data from KYPS.

The Korean Population Census provided information about the objective neighborhood characteristics at the "Shi/Kun/Ku" level[2] for the years 2000, 2005, and 2010. These geographic identifiers are comparable to that of a census county (parish or divisions of state) in the U.S.[3], as it is smaller than the state, but larger than a census tract. There are 251 Shi/Kun/Ku in Korea and their population size ranges from 7,581 to 628,937 (mean = 185,859; standard deviation = 146,769). In the present study, a total of 182 geographic areas (Shi/Kun/Ku) were used in the analysis, with an average of 21 youth per neighborhood (standard deviation = 14; range: 1-66).

Measures

Dependent variable. The original data contained fourteen health-risk behaviors across six waves of data (smoking, drinking, sexual intercourse, sexually assaulted others, had sugar-daddy association, beat others, have gang-fight, tease or banter severely, threaten others, collective bullying, run away from home, unexcused absence from school, rob, steal). For parsimony, this chapter grouped these fourteen outcomes that were similar in nature into five categories (smoking, drinking, sexual activity, aggression, and rule-breaking behaviors).

Youth had a *smoking* measure of "1" if they had smoked in the past year for the first time in their life and "0" if they had not. Similarly, youth had a *drinking* measure of "1" if they ever drank in the past year for the first time in their life and "0" otherwise.

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[2] The distinction between "Ku" and "Kun" is based on urbanicity. The former identifies urban areas, whereas the latter identifies rural areas. The "Shi" refers to small cities that do not contain any smaller divisions ("Ku") and are treated as an equivalent entity as "Ku" or "Kun" for the purpose of data presentation.
[3] According to the U.S. Census (2010), there are a total of 3,221 countries (or county-equivalents). The mean population size of U.S. counties is 97,011 (SD=309,299; range: 82-981,865)

Sexual activity was coded as "1" if the youth ever engaged in sexual intercourse[4],

sexually assaulted others, or had a sugar-daddy association in the past year for the first

time in their life. *Aggression* was "1" if youth experienced externalizing behaviors

related to inflicted harm towards others (e.g., beating others, gang fight, severe teasing or

bantering, threatening others, collective bullying) in the past year for the first time in their

life. *Rule-breaking* was coded as "1" if youth experienced externalizing behaviors that

were not related to directly inflicted harm against others (e.g., running away from home,

unexcused absence from school, robbing, stealing) for the first time in their life. Finally,

experience of *any undesirable health behavior* was coded as "1" if the youth experienced

any of the above mentioned five behaviors (e.g., smoking, drinking, sexual activity,

aggression, and rule-breaking) for the first time in their life in the past year.[5]

Independent variables. There were two independent variables, each of which

represented social resources accrued from relationships within the family and community

perceived by the youth. The family-level social capital measure was available for all six

waves of the study. It was operationalized by the average of seven questions (α for Wave

1=0.85) measuring the level of parent-youth communication (e.g., "Parents and I

candidly talk about everything," "I frequently speak outside experiences and my thought

to parents") and parental knowledge of youth's activities (e.g., "When I go out, parents

usually know who I am with," "When I go out, parents usually know what I am doing").

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[4] It is arguable that, unlike inflicting sexual assault or having a sugar-daddy association, having sexual
intercourse is a developmentally normative activity, and thus not a "health-risk" behavior. However, given
that less than 40% of Korean youth (aged 13-18) who have experienced sexual intercourse reported to have
used some form of contraception, and that 25% of youth who had reported to have used contraceptives use
non-effective methods, this chapter will consider sexual intercourse to be equivalent to a health-risk.
[5] If there was a tie between more than one health-risk activities, the most *frequent* activity was selected. If
there still was a tie, the health behaviors were randomly assigned to become the "first" health-risk outcome.

The *collective efficacy* community-level social capital measure was available for

Wave 2-6. It was measured by six questions (α for Wave 2[6]=0.80) representing social

cohesion (e.g., "My neighbors have close relationships with each other," "My neighbors

trust each other") and informal social control (e.g., "Elderly neighbors will scold me if I

smoke or drink in the neighborhood," "My neighbors will intervene or report to the

police it I am assaulted by other kids in the neighborhood"). Both variables were

measured using a Likert scale with five response categories (1=very untrue; 1=somewhat

untrue; 3= neither true/untrue; 4= somewhat true; 5 very true).

Control variables. As described earlier, a large body of empirical work points to

the way in which a constellation of family and community socioeconomic status can also

be linked with youth problem behavior. Thus, the following measures were included as

statistical controls. *Average family income* was measured in 10,000 Korean won.

Parent's education measured the highest level of education between mother and father,

and was a continuous variable ranging from "0" (no schooling) to "8" (doctoral degree).

Family structure was represented by four dummy variables (living with both parents,

father only, mother only, and no parent).

As objective residential environments can present different environmental

opportunities for youth to engage in maladaptive behaviors, measures of structural

neighborhood conditions were also included as controls. These measures were the

proportion of married families and *proportion of families whose family head had at least*

some college in the neighborhoods (Shi/Kun/Ku-level).

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[6] The internal consistency measure (α) for collective efficacy was calculated based on Wave 2 because it
was not asked in Wave 1.

Analysis

This current chapter provided a descriptive summary of the *prevalence* of behavioral health outcomes among Korean youth, in addition to the *age of first occurrence* of these outcomes. Youth information from waves 1 to 6 was used to report these descriptive statistics. Longitudinal survey weights were applied.

In the subsequent part of the analysis, the paper used *discrete-time survival analysis with logistic regression* to model the relationship between the first occurrence of health-risk behavior and its predictors (e.g., parental monitoring and collective efficacy). The advantage of this analytic method is that it can capture the dynamic behavior of a set of individuals who were exposed to the risk of initiating health-risk behaviors throughout different time intervals. There were six separate sets of analysis corresponding to the onset of each of the six outcomes of interest (e.g., smoking, drinking, sexual activity, aggression, rule-breaking, any behavioral health outcome). This event history portion of the analysis was based on Waves 2-6 of the KYPS (merged with the Korean Population Census) because the collective efficacy measure was not available in Wave 1. Thus, youth respondents who had engaged in any of the undesirable activities prior to the first wave of the panel study (n=1,551), as well as those who had engaged in their first health-risk behavior in Wave 1 (n=202) were omitted from the survival analysis (Wave 2-6), resulting in of sample size of 1,696 (number of youths) for the event history portion of the analysis.

RESULTS

Descriptive Statistics

      Table 6 summarizes the characteristics of KYPS respondents, their families, and

communities in which they live. There were about an equal number of males and females.

The average score for parental monitoring was 3.37. Average family income was 321.91

(10,000 Korean Won). About 9% of the sample had parents who completed less than

high school. Roughly 90% of the parents completed high school or had some college

education. Most adolescents in the sample lived with both parents (93%) and less than 7%

lived with a single parent or alone.

Table 6. Descriptive summary of KYPS youth

Variable	Mean	Standard Deviation	Range	Observations
Youth Demographics				
Male	0.50	0.50	0-1	3,449
Family Level				
Parental monitoring	3.37	0.59	1-5	3,449
Family income (10,000 KW)	321.91	153.06	15-2,000	3,434
Parent's education				
Less than high school	0.09	0.29	0-1	3,413
High school	0.45	0.50	0-1	3,413
At least junior college	0.45	0.50	0-1	3,413
Family structure				
Lives with both parents	0.93	0.22	0-1	3,449
Lives with father only	0.02	0.12	0-1	3,449
Lives with mother only	0.04	0.17	0-1	3,449
Lives with neither	0.00	0.05	0-1	3,449
Community Level				
Collective efficacy	2.88	0.58	1-4.87	3,375
Families whose head has at least some college (%)	0.36	0.12	0.07-0.75	3,446
Married families (%)	0.70	0.04	0.54-0.84	3,446

As for community-level variables, the collective efficacy score was 2.88. Families whose head had at least some college education comprised 36% across all neighborhoods in this study. The average proportion of married families across all neighborhoods was 70%.

Table 7 shows the prevalence of youth who engaged in each of the five risk categories from 8th grade to one year after high school. In 8th grade, about 30% of Korean youth reported to have engaged in aggressive activities that year, and this proportion gradually decreased as youth became older. On the other hand, the proportion of youth who drank alcoholic beverages in the past year increased as youth got older, such that at the final year of high school 54% of respondents reported to have consumed alcohol in the past year. The significant ($p < 0.001$) Pearsons chi-square test (with 5 degrees of freedom) of each risk measure indicated that prevalence of health-risk behaviors are not statistically equivalent across grades (from 8th grade to one year after high school).

Table 7. Prevalence of engagement in health-risk outcomes in past year by grade (weighted)

	8th grade	9th grade	10th grade	11th grade	12th grade	after high school	p-value of chi-square test
Cigarette smoking	13.2%	10.5%	12.1%	14.3%	15.9%	25.2%	$p < 0.001$
Alcohol consumption	29.8%	28.6%	36.9%	45.4%	54.3%	88.0%	$p < 0.001$
Aggression[a]	30.1%	11.7%	7.6%	6.2%	4.8%	3.1%	$p < 0.001$
Rule-breaking[b]	15.3%	11.4%	9.4%	8.5%	10.7%	2.1%	$p < 0.001$
Sexual[c]	1.5%	1.1%	1.6%	2.5%	3.0%	8.6%	$p < 0.001$

Note: [a] Beating others, gang fight, severe teasing or bantering, threatening others, collective bullying.
[b] Unexcused absence from school, running away, stealing, robbing.
[c] Sexual activity, sugar daddy association, sexually assaulted others.

Table 8. Initiation of behavioral health outcome by age and type (weighted)

Age of First Risk	None	Smoke	Alcohol	Aggress.	Rule-Break	Sexual	Any (per age)	Any (cum. over age)
5	.	0.0%	0.1%	0.2%	0.1%	0.0%	0.4%	0.4%
6	.	0.1%	0.2%	0.5%	0.1%	0.0%	0.9%	1.3%
7	.	0.1%	0.1%	0.2%	0.3%	0.0%	0.7%	2.0%
8	.	0.1%	0.1%	0.5%	0.2%	0.0%	0.9%	2.9%
9	.	0.2%	0.5%	1.3%	0.5%	0.1%	2.4%	5.3%
10	.	0.1%	0.4%	1.5%	0.4%	0.0%	2.6%	7.9%
11	.	0.6%	2.1%	4.0%	0.7%	0.0%	7.5%	15.3%
12	.	2.1%	5.3%	5.0%	1.3%	0.1%	13.8%	29.1%
13	.	2.4%	5.9%	5.8%	1.7%	0.1%	15.8%	44.9%
14	.	0.5%	2.7%	1.9%	0.7%	0.2%	5.9%	50.8%
15	.	0.7%	4.3%	1.7%	1.2%	0.1%	8.0%	58.8%
16	.	0.4%	6.7%	0.7%	0.9%	0.1%	8.9%	67.6%
17	.	0.2%	5.6%	0.2%	0.3%	0.0%	6.3%	73.9%
18	.	0.2%	6.0%	0.1%	0.2%	0.0%	6.6%	80.6%
19	.	0.1%	11.6%	0.0%	0.0%	0.0%	11.8%	92.3%
no risk	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	100.0%
sum	7.7%	7.8%	51.8%	23.6%	8.5%	0.6%	100.0%	.

Note: This table provides only partial information about youth's first-time engagement in health-risk behaviors. This is due to the structure of the dataset that uses both retrospective and prospective data of youth behaviors. At Wave 1, youth were asked to report the age of initiation of the very first health-risk behavior (among smoking, alcohol, aggression, rule-breaking, sexual activities) that occurred prior to the first wave of the study. However, information about age of onset for subsequent health-risk behaviors is not available as youth were not asked in the retrospective part of the dataset. Thus, this table presents information about youth who had initiated any one of the five health-risk behaviors for the first time, but then were considered to be no longer at risk for initiating other types of behaviors. For example, youth who had reported to have engaged in their first health-risk activity (e.g., alcohol drinking) at age 7, will be automatically treated to have not initiated any other type of health-risk behavior (e.g., cigarette smoking, aggression, rule-breaking, sexual activity) before the first wave of the study, as information about this is not available. Unlike information provided in Table 8, however, Tables 9 and 10 reported results from the discrete-time logistic analyses that used prospective (not retrospective) data based on youth who initiated any one of these outcomes for their first time *but still* were still at risk of engaging in any other type of health-risk behavior.

    In addition to prevalence rates, the current study reported the occurrence of first

health-risk behavior (Table 8). The period in which youth first experienced one of the

five health behaviors was as early as 5 years of age. More than 80% of the sample had

engaged in an undesirable health activity by the end of high school. The time of first-

time initiation peaked at around 12 and 13 years of age (transition from elementary school to middle school), and then again at age 19 (first year out of high school). Alcohol consumption and aggression were the two most frequent first risks. Aggression was the most prevalent first-risk until age 11. From age 12, alcohol consumption took the lead.

Discrete-Time Logistic Regression

Logistic coefficients were estimated to predict the likelihood of first-time engagement in *any* of the five categories of health behaviors (Table 9). Results from Model 1 suggested that demographic factors alone, can predict engagement in any of the five health behaviors. Males were more likely to be involved in these behaviors than females. The likelihood of onset was lower for younger adolescents, but gradually increased with each wave (or age).

When family-level measures were added (Model 2), family-level social capital significantly reduced the likelihood of first engagement. Among other family measures, only family structure (youth who lived with fathers only, compared to those living in two-parent families) had a significantly greater association ($p < 0.01$) with the probability of first-time engagement in health-risk behaviors.

Model 3 examined the role of community-level factors. Results indicated that greater levels of community-level social capital were associated with lower probability of first involvement. Also, living in a neighborhood with a larger proportion of highly educated families (% of families whose head had at least some college) posed lower risk.

The final model (Model 4) included a comprehensive set of demographic, family, and community measures. The magnitude of the family social capital coefficient in this

model was smaller than those in Models 2 and 3, respectively. The measure for

community social capital was no longer significant. Coefficients of individual, family,

and community control measures were similar to results reported in Models 1-3.

Table 9. Discrete time logistic regression: Onset of *any* outcome ($N = 5{,}051$)

Variables	Model 1	Model 2	Model 3	Model 4
Social Capital				
Family-level		**-0.327***		**-0.304***
		(0.049)		**(0.051)**
Community-level			**-0.137**	-0.071
			(0.045)	(0.047)
Individual Controls				
Male	0.363***	0.264***	0.350***	0.263***
	(0.069)	(0.071)	(0.069)	(0.071)
Wave 3[a]	0.389***	0.390***	0.391***	0.392***
	(0.095)	(0.095)	(0.095)	(0.096)
Wave 4[a]	0.253*	0.269**	0.253*	0.269*
	(0.103)	(0.104)	(0.105)	(0.106)
Wave 5[a]	0.683***	0.733***	0.695***	0.740***
	(0.105)	(0.106)	(0.108)	(0.110)
Wave 6[a]	2.845***	2.930***	2.871***	2.942***
	(0.126)	(0.128)	(0.131)	(0.133)
Family Controls				
Family income		0.000		0.000
		(0.000)		(0.000)
Parent's education		-0.072*		-0.061*
		(0.029)		(0.030)
Lives with father only[b]		0.497*		0.508*
		(0.246)		(0.246)
Lives with mother only[b]		0.173		0.169
		(0.177)		(0.177)
No parents[b]		-0.424		-0.485
		(0.918)		(0.911)
Community Controls				
% of families whose head has at least some college			-0.871**	-0.602*
			(0.284)	(0.300)
% of married families			0.391	0.261
			(0.790)	(0.793)
Constant	-1.737***	-0.329	-1.289*	-0.229
	(0.078)	(0.216)	(0.577)	(0.610)

Note: Standard errors in parentheses (*** $p < 0.001$; ** $p < 0.01$; * $p < 0.5$).
  [a] Reference group is Wave 2.
  [b] Reference group is living with two-parents.

Table 10. Discrete time logistic regression: Onset of *single* health-risk behavior (smoking, aggression, rule-breaking, drinking, sexual activity)

Variables	Model 5	Model 6	Model 7
Smoking (N = 11,922)			
Family	**-0.376***		**-0.365***
	(0.054)		**(0.055)**
Community		**-0.124***	-0.049
		(0.051)	(0.053)
Aggression (N = 9,790)			
Family	**-0.199***		**-0.164[†]**
	(0.082)		**(0.084)**
Community		**-0.183***	**-0.144[†]**
		(0.077)	**(0.080)**
Rule Breaking (N = 11,590)			
Family	**-0.467***		**-0.441***
	(0.063)		**(0.065)**
Community		**-0.204***	**-0.124***
		(0.060)	**(0.063)**
Drinking (N = 7,186)			
Family	**-0.286***		**-0.287***
	(0.041)		**(0.042)**
Community		-0.050	0.009
		(0.038)	(0.040)
Sexual Activity (N = 14,419)			
Family	**-0.531***		**-0.527***
	(0.079)		**(0.081)**
Community		-0.126	-0.014
		(0.077)	(0.081)

Note: Standard errors in parentheses (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [†] $p < 0.1$).
    Controls: male, wave, family income, parent education, family structure, % of families in the community whose head has at some college education, % of married families in community.

      Identical discrete time logistic regression analyses were conducted for *each of the five behavioral health categories,* separately (Table 10). For parsimony, only results for the main variables of interest—family and community social capital—were reported. Family-level social capital, regardless of when controlling (Model 7) and not controlling

(Model 5) for collective efficacy, was an effective source of protection against the onset of drinking, smoking, sexual activity, aggression, and rule-breaking behaviors.

On the contrary, there were mixed results for community-level social capital. Community social capital was significantly associated with a lower probability of first-time involvement in smoking, aggression, and rule-breaking activities, when not controlling for family social capital (Model 6). Of these three behaviors, only aggression ($p < 0.1$) and rule-breaking were still significant when controlling for family-level social capital (Model 7). Results suggested that for drinking and sexual activities, community-level social capital may not be a statistically significant protective factor.

DISCUSSION

This chapter was able to identify informal protective resources embedded in relationships within the family, as well as in the community, that may help prevent or delay youth participation in various behavioral health outcomes among those who have not yet experienced the event. In this regard, this research is distinct from a large body of existing literature that identifies various social relationships that predict the prevalence of adolescent health-risk behaviors without considering youth's prior experience of these behaviors.

Information from a nationally representative sample of Korean youth suggested that there was evidence of early initiation across various behavioral health outcomes. By the end of high school, 80.6% of this cohort of youth had experienced at least one of five behavioral health activities (smoking, drinking, rule-breaking, aggression, and sexual activity). For example, although the lawful age of alcohol consumption and cigarette

smoking is 19 (MOGEF, 1999), results showed that some youth had their first drinking and smoking experience as early as age 5 (Table 8). By the end of high school, at least half of this nationally representative youth cohort had consumed alcohol and a quarter had experience smoking (Table 7).

In light of the aforementioned high prevalence of youth involvement in health-risk behaviors, this chapter found that informal social control mechanisms embedded in family and community relationships may be a resource for preventing youth early involvement in various behavioral health outcomes. Especially, all analytic models pointed to family relationships as a social factors that may provide the effective means for delaying the onset of heath-risk behaviors. In this chapter, the measure of family-level social capital was constructed with survey questions that asked about the level of communication between parent and youth, the willingness of youth to expose their information, as well as parental knowledge about youth's activities and whereabouts. Thus, respondents reported to have high levels of family social capital are likely to live in family environments where parents have sufficient information about youth's activities. This permits parents to take preventive measures against youth from developing health-risk behaviors at an early stage in life. In this regard, results from this analysis provided support consistent with the literature that claims that parent-youth communication and interaction through voluntary information sharing and accountability can serve as a protective factor for youth outcomes (Guilamo-Ramos et al., 2010; Stattin & Kerr, 2000).

In contrast to the persistently strong role of family social capital in preventing the onset of each of the five health-risk behaviors, community social capital was protective for only smoking, aggression, and rule-breaking activities. Knowledge of the

neighborhood contextual environments in which various health-risk behaviors occur is one possible way for understanding why community-based informal mechanisms were found to be resourceful for delaying the onset of some behavioral health outcomes, but not for others.

For example, according to the nationally representative Korean Youth Risk Behavior Surveillance Survey (MOGEF, 2010), neighborhood allies and streets, as well as the playground were the most common areas where youth engaged in smoking. Also, bullying against others was most frequent within the school, around school vicinities, and neighborhood allies. On the other hand, the most frequently reported location for drinking alcoholic beverages were at the respondent's own home or their friend's home. According to a government report, the vast majority of child and adolescent sexual assaults occurred at the homes of the victim or perpetrator (MOGEF, 2008).

The clandestine nature of the physical areas in which drinking and sexual activities occur, in contrast to overt spaces in which smoking, bullying, and rule-breaking activities occur, may offer a plausible hypothesis for why informal social control mechanisms at the community level may appear as more effective in preventing certain types of health-risks behaviors. Findings from the chapter imply that even within communities characterized as having high levels of mutual trust and collective engagement to govern youth actions, if youth health-risk activities occur in covert places, informal social control mechanisms at the community-level may be less effective in preventing youth from being involved in those health-risk behaviors. However, the effectiveness of the possibly more intimate family-level relational resources that is based on parent-youth communication and interaction is less contingent upon the place in which

health-risk activities occur. Thus, a detailed investigation of the moderating effects of place of occurrence in the relationship between social capital and youth outcomes merits future research.

Limitation

Despite the salience of the analytic findings, results from this chapter must be interpreted with the following points in mind. Firstly, information about the initiation of drinking and smoking is not equivalent to whether these adolescents engaged in these activities at abusive or addictive levels. Nonetheless, study results pointing to the large fraction of youth who had engaged in smoking and drinking before reaching the legal age is in of itself sufficient reason for researchers and practitioners to attend to the ways in which they can acquire resources that can prevent early initiation.

Although the current study used longitudinal data, the results do not necessarily infer causal effects. This is because not only does the quality of relational resources determine youth behavioral health outcomes, but the way in which youth act may also trigger different relationship qualities within the family and community. For example, transactional relationships (Sameroff, 2000) would be a concern for family-level social capital, as prosocial youth may communicate more often with parents, and thus provide a greater opportunity for parents to be aware of youth whereabouts and with whom youth engage. Similarly, the quality of community-level social capital may be a result of youth outcomes. It is possible that when prosocial youth are clustered in neighborhoods, this may facilitate cohesive relationships within the community and thus encourage mutual

participation the management and communal parenting of youth in the neighborhood. A detailed investigation of the exact causal processes is warranted in future studies.

Finally, youth who had already experienced their first undesirable behavior were omitted from the discrete-time logistic regression portion of the analysis. Therefore, current results may be based on a relatively less deviant or problematic group of youth. The protective role of family and community social capital in delaying the occurrence of engaging in health-risk behaviors for the first time can be underestimated if the analytic sample youth (n=1,696), compared to the early initiators who were omitted from the sample (n=1,753) respond more to the benefits of relational resources. On the other hand, results of this study may be overestimated if the sample youth, compared to the omitted youth, respond less to the protective benefits of social capital.

Implication and Conclusion

Understanding how multidimensional social relationships are associated with youth development and socialization is a crucial task for deriving policy implications among Korean youth (Lee et al., 2010). Particularly, as most studies that investigate maladaptive behaviors among Korean youths have focused on the risk factors, a further examination of the protective factors in the process of youth development and socialization is necessary (Kang, 2007).

Thus, this chapter identified positive family and community-level social relationships that predict the delay in first time-engagement in health-risk behaviors among Korean youth. The finding that family and community relational resources can be resourceful for governing and managing youth health-risk behaviors can be informative

for designing programs to prevent maladaptive youth outcomes during a natural period of versatile transformation. Specifically, the ideas of information-sharing, communication, mutual trust, and social cohesion that were represented by family- and community-social capital (Sampson et al., 1997; Stattin & Kerr, 2000) can be adapted in identifying effective intervention programs before the health-risk event occurs. Efforts to prevent early initiation of adolescent health-risk behaviors may be more successful when the current formal legislative means of governance (e.g., Juvenile Protection Act, Act on the Prevention of and Countermeasures against Violence in Schools), are accompanied by programs that facilitate informal mechanisms of social control through family and community relationships.

<center>**Chapter 5**</center>

<center>**Conclusion**</center>

Overall Contribution of Dissertation

  Broadly, this dissertation may advance literature concerning adolescent mental health and health-risk behaviors and its association with social relationships by addressing some research gaps. The existence of underrepresented demographic groups, the lack of consideration for variation in the association between social relationships and behavioral health outcomes, and the lack of studies investigating first-time initiation of behavioral health outcomes are some of the missing pieces in the literature, which the dissertation tried to address.

  First, the dissertation focused on two demographic groups that have been relatively underrepresented in the literature. The research on *understudied populations* allowed the opportunity to contribute to providing implications for the expansion of culturally-sensitive prevention or early intervention practices concerning youth of various backgrounds and experiences. Specifically, Chapters 2 and 3 examined first and second generation immigrant youth in the U.S. A study of this emergent and increasing U.S. population that have high levels of susceptibility for developing depressive symptoms (Suárez-Orozco & Suárez-Orozco, 2001) can provide resourceful background knowledge for researchers and practitioners. The other group of interest in the dissertation was

South Korean adolescents. The examination of an international population in the behavioral health literature may extend opportunities to this field of research to conduct comparative studies across regions and discuss the universality or uniqueness of the role of broader social relationships.

Second, the dissertation applied various analytical models to account for *variations* in the magnitude of the relationships between social relationships and behavioral health outcomes. For example, Chapter 2 used propensity score stratification methods to capitalize on the idea that an individual's probability of experiencing perceived discrimination is not random, but is a function of their various observed demographic and social attributes. This analytic method allowed the detection of a systematic pattern in the mental health response to perceived discrimination across individuals. Similarly, Chapter 3 used quantile regression methods to identify the extent to which a single relationship parameter that focuses on the average individual may only provide limited information about the true nature of the discrimination-depression relationship.

Third, the dissertation offered insights concerning the contribution of social relationships in predicting the onset of youth behavioral health outcomes. The shift of focus from *prevalence* of health-risk behaviors among youth to the *onset* of health-risk behaviors only among youth who had not already experienced any health-risk activities may be necessary for conducting prevention and early intervention research. Results estimated from the event history models in Chapter 4 may be particularly useful for identifying informal types of social relationships that relate to youth engagement in various health-risk behaviors conditional on adolescents without any prior experience.

Contribution of Each Chapter

Alongside the dissertation's general contribution to the literature, the three

empirical chapters of the dissertation may help address some of the specific research

questions that are pertinent to behavioral health challenges faced by youth of immigrant

backgrounds and Korean adolescents. The following section provides a summary of each

of the three empirical examinations, as well as the practice and policy implications drawn

from the findings.

The first set of analyses was presented in Chapter 2. Using a sample of first and

second generation immigrant youth, this exploratory study investigated the plausibility of

two completing hypotheses based on ideas in accordance with social stress theory

(Kessler, 1979; Thoits, 2010; Turner & Avison, 2003). In response to stress theorists'

claims that exposure to a stressful event and one's health response to it are closely linked,

this chapter scrutinized whether individuals who are most likely to be exposed to

situations in which they experience perceived discrimination exhibit the greatest

("exacerbation hypothesis") or the smallest ("adaptation hypothesis"), response in

depressive symptoms. Findings from propensity score stratification analysis were

consistent with the predictions of the adaptation hypothesis. This suggested that youth

with the greatest probability of being exposed to perceived discrimination showed the

smallest mental health response. This adaptation to perceived discrimination may have

occurred through mechanisms of self-adjustment, desensitization, coping, and resiliency

development.

Several important implications can be draw from this chapter. A better

understanding of the ways in which youth develop resiliency to the harmful effect of

discrimination may highlight the need to design interventions that aim to reduce experiences of discrimination and depressive symptoms, and at the same time, to help enhance coping mechanisms. Additionally, knowledge obtained from this multidimensional risk-assessment approach may be applied to facilitate social programs that have the capability of addressing the diverse unique experiences of youth of immigrant backgrounds.

In a parallel, Chapter 3 also examined variations in the association between perceived discrimination and feelings of depression among youth of immigrant backgrounds, but with an alternative methodological approach. Quantile regression results indicated that a single relationship measure that focuses on the *average* individual would have provided a poor estimate of the perceived discrimination-depression relationship by *understating* its potential harm in the higher end of the conditional depressive symptoms distribution, while *overstating* the relationship size in the lower end, compared to more *normative* levels of risk for mental health concerns. As such, this study was able to capture the variation in the size of the discrimination-depression relationship along different points of the conditional distribution of depressive symptom scores that would otherwise have been undetected using methodological approaches focusing only on the average.

Findings from this chapter may have significant implications for practitioners and policy makers, who are often most interested in understanding the daily stressful experiences and their correlates in the most marginalizing situations. Findings from this study may provide insightful ways to improve our understanding of the specific

behavioral patterns of targeted populations at risk, and further direct resources for providing effective treatment for these groups.

Finally, Chapter 4 examined the role of informal processes of social control within the family and community in delaying or preventing the onset of several of health-risk behaviors among South Korean youth. This study was motivated by social capital theory (Coleman, 1988) that underscored the strength of relational resources in protecting youth from engaging in maladaptive behaviors. Results from discrete-time logistic regression analyses suggested that family-level social capital may contribute to significantly reducing the risk of youth involvement in various health-risk behaviors. However, community-level social capital only played a significant role in delaying the onset of smoking, aggression, and rule-breaking behaviors—all of which occur in public and communal areas.

Study results provided the following implications. The robust protective role of proximal family relationships across all domains of youth health-risk activities pointed to the potential strength of facilitating family-based prevention and intervention practices that promote voluntary communication and information sharing between parent and youth. Similarly, as suggested by the findings, the notion of shared parenting in a community based on mutual trust and responsibility can provide an effective resource of youth governance and control against the initiation of behavioral health outcomes. Thus, community-based interventions should be encouraged to include enhancing opportunities for social capital development, as well.

Methodological Limitations

As elaborated above, this dissertation may offer invaluable knowledge that addresses some of the research gaps in the literature concerning social relationships that are associated with adolescent mental health and health-risk activities. Nonetheless, results from the three empirical chapters of the dissertation must be interpreted with the following methodological limitations in consideration.

Generalizability

The first methodological limitation of the dissertation is non-generalizability of analytic findings. From a temporal aspect, results from the three empirical chapters must be approached with caution when trying to incorporate the findings to understand behavioral patterns of youth populations from different cohorts. For example, the CILS study surveyed high school freshman in 1992 and the KYPS was collected from a cohort of students who were in middle school in the 2003. Should there exist any period-specific factors influencing these youth cohorts that may also modify the perceived discrimination-depressive symptoms relationship or the social capital-youth health behavior relationship, results from this dissertation may not be applicable to understanding the behavioral patterns of similar-aged youth cohorts at other time periods.

In addition to the temporal dimension of generalizability, it is also important to consider the regional dimensions. Although CILY surveyed both U.S.-born and foreign-born immigrant youth with racially and ethnically diverse backgrounds from 77 different national origins, youth were sampled from specific areas of California (San Diego) and Florida (Miami and Fort Lauderdale) only. Furthermore, this convenience sample did not

provide survey weights for the study results to be generalizable to first and second generation immigrant youth population in the U.S.

Finally, although the Korea Youth Panel Survey is a nationally representative study of adolescents in South Korea, the size of the analytic sample for the event history portion of the analysis was 1,696 due to left-censoring. Of the total 3,449 KYPS survey youth, 1,551 youth were omitted from the event history portion of the analysis because they had already experienced any one of the five health behaviors (e.g., drinking, smoking, aggression, rule-breaking activity, and sexual activity) prior to the first wave of the panel survey. Another 202 youth who had engaged in their first health-risk activity in Wave 1 were omitted from the event history portion of the analysis because the measure for community-level social capital—a critical measure of the study—was not available until Wave 2 (the event history analysis was conducted for Waves 2-6). The interpretation of results of the event history analysis of this chapter should be limited to that among a subsample of youth who were relatively late initiators of health-risk behaviors (i.e., experienced first health-risk after age 15), compared to the omitted youth who were relatively early initiators (i.e., experienced first health-risk before age 15). Therefore, should there be any confounding factors that affect the quality of parent-youth or community-youth relationships, as well as, time of initiation, the significance of informal family and community relational resources identified in the current chapter may be different from that of early initiators that were omitted from the analysis.

Causality

One important criterion for establishing causal relationships is to ensure nonspuriosness in the link between the independent and dependent variables of interest. Nonspuriousess is possible, only when the independent variable of interest is randomly determined. However, in using data from observational studies (CILS and KYPS) the dissertation faced limitations in confirming any casual influences because measures of perceived discrimination or the quality of family- and community-level relationship were not randomly assigned across individuals. Because perceived discrimination and social capital were not randomly determined with respect to various outcomes of interest, it is unclear whether the relationship measure between the independent and dependent variables are reflective of the true size of the causal effect. Unfortunately, experimental study designs are not a feasible option for research that concern topics of mental health, perceived discrimination, and quality of relationships, largely in part due to ethical reasons. Furthermore, even in the rare event that random assignment of exposure to stressors becomes possible, it would be impossible to randomly assign one's evaluation or appraisal of the stressful event.

Nonetheless, the empirical chapters were attentive to the issues of selection bias related to the non-random nature o0f the primary variables of interest. In attempt to proxy a randomized framework, Chapter 1 used propensity score stratification methods. Although this analytic method is advancement over standard regression models, it heavily relies on a non-verifiable statistical assumption called the strongly ignorable treatment assignment assumption (Rosenbaum & Rubin, 1984). Chapters 2 and 3 included comprehensive control variables in attempt to adjust for the various confounding factors

that lead to the outcome of interest. Although some studies have proposed that the inclusion of an extensive set of controls may contribute to improving the ability to estimate unbiased results (Vartanian & Buck, 2005), comprehensive controls may not completely eliminate concerns with regards to selection bias.

Another key criterion for making causal interpretations is the ability to establish temporal order. In the dissertation, however, none of the three empirical chapters used time-lagged measures as predictors. In the first and second chapters that investigate youth from immigrant families, the primary independent and dependent variables of interest were lifetime experience of perceived discrimination and level of depressive symptoms in the past week, respectively. Because both measures were reported in Wave 2, it was difficult to establish any temporal order between the experience of perceived discrimination and mental health status. Although the perceived discrimination measure was available in Wave 1 of CILS, this measure was only used as a control variable. The studies intentionally did not focus on the interpretation of any lagged measures of perceived discrimination, because the time interval between Wave 1 and Wave 2 was approximately three years. It did not seem informative to examine the effect of perceived discrimination that was reported three years ago on one's current mental health conditions.

To overcome concerns of temporality and long intervals between panel waves in behavioral health research, the use of ecological momentary assessment (EMA) method has been recommended in the clinical literature (Debbie & Simon, 2006). Compared to traditional study designs, this innovative method can provide a methodological advantage that allows the respondent to report their mental health conditions and engagement in

health-risk behaviors immediately at the time of experience. Not only can data be collected frequently, but also EMA methods permit data to be collected at multiple time points. Therefore, this method can help improve the study of social interactions through an accurate assessment of behavioral health measures and associated social relationships, and thus should be applied in future research.

In sum, the difficulty to establish causal relationships has been a general limitation of studies that examine self-reported measures of social relationships and behavioral health outcomes (Kessler, 1997). However, the ability to make causal inferences in the relationship between social relationships and behavioral health outcomes is crucial for designing social programs, as the knowledge of causal links can directly lead practitioners and researchers to modifiable points of intervention. Thus, future studies should strive to be able to make causal interpretations by incorporating advanced analytic methods and study designs.

Conclusion

This dissertation examined how social relationships—a measure of the quality of social interactions between individuals within social institutions—are associated with behavioral health outcomes such as depressive symptoms, substance use, externalizing behaviors, and unsafe sexual activities among adolescents. The ways in which the study findings present implications for the development of prevention and early intervention programs were also discussed. Each of the three empirical studies of the dissertation is expected to advance, albeit marginally, the literature concerning youth behavioral health. As youth mental health and health-risk behaviors are determined by a set of internalized

relationship experiences through multiple and repeated social interactions, a continuous

examination of other social relationships and youth behavioral health outcomes, beyond

what was the scope of this dissertation, is necessary in the future.

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