

2015

# Ethnic Discrimination: Measurement And Associations With Smoking-Related Outcomes Among Arab Male Current And Former Smokers In Israel

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**ETHNIC DISCRIMINATION: MEASUREMENT AND ASSOCIATIONS WITH SMOKING-RELATED OUTCOMES AMONG ARAB MALE CURRENT AND FORMER SMOKERS IN ISRAEL**

**by**

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**Submitted in Partial Fulfillment of the Requirements**

**For the Degree of Doctor of Philosophy in**

**Health Promotion, Education, and Behavior**

**The Norman J. Arnold School of Public Health**

**University of South Carolina**

**2015**

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## DEDICATION

I dedicate this achievement to all those who supported me throughout this journey. To my beloved family overseas, my precious friends here at USC, and to my amazing partner Herb Morehouse.

## ACKNOWLEDGEMENTS

First and foremost I want to thank my amazing committee co-chairs Dr. Katrina Walsemann and Dr. James Thrasher for teaching me so much and for supporting me throughout my five year journey here at the University of South Carolina. To both of you I say: thank you for setting the standards high and for believing that I could meet them and for all the opportunities you have given me to learn and to grow.

I would also like to thank Dr. Bethany Bell for her ample support of me. Bethany: Your statistics classes were my favorite classes and I enjoyed taking part in them. Many thanks to Dr. Nihaya Daoud for encouraging me to take this journey into the PhD program in the first place and for giving me the opportunity to use data on Arabs in Israel, a population that I am most interested in studying.

Abundant thanks to my family overseas and to my friends Caroline Bergeron, Jessica Escobar, ChiaHua Lin, and Ebru Cayir. You made my journey pleasurable and easier. I appreciate your care and support through good and rough times.

Special thanks to my wonderful partner Herb Morehouse for his support and love.

## ABSTRACT

We evaluated the psychometric properties of two instruments used to assess ethnic discrimination among Arabs in Israel. The “Experiences of Discrimination” (EOD) scale was adapted to assess interpersonal ethnic discrimination (EOD-A) and a new measure was developed to assess perceptions of institutional group discrimination (IGD) against Arabs as an ethnic group. Then, we examined the association between each form of ethnic discrimination (interpersonal and institutional) and smoking outcomes among Arab men from Israel, and whether social support and coping efficacy moderate these associations. Data were analyzed from a cross-sectional study of Arab male current and former smokers, aged 18-64. A confirmatory factor analysis (CFA) model was estimated to assess the factor structure of the EOD-A. A split sample exploratory factor analysis (EFA) approach was used to assess the factor structure of the IGD measure. Cronbach’s alpha was calculated to assess reliability. In unadjusted linear regression models, ethnic discrimination was regressed on other constructs to assess construct validity. Next, logistic and linear regressions were estimated to assess the association between each form of ethnic discrimination and smoking status and nicotine dependence, respectively. CFA of the EOD-A produced a model with a single underlying factor and acceptable fit to the data (CFI = 0.967; TLI = 0.956). Standardized factor loadings ranged from to 0.65 – 0.77 and were all statistically significant at  $p < .001$ .

Results from split sample EFA of the IGD measure support a one factor solution with good model fit (CFI = 0.986; TLI = 0.980) and factor loadings  $\geq 0.68$  that were statistically significant at  $p < .05$ . The results were similar across the split samples. Both measures had good internal consistency reliability (i.e.,  $\alpha = .90$  and  $.93$ , for the EOD-A and the IGD measure, respectively). Construct validity for both measures was supported by positive associations with a single-item measure of ethnic discrimination, indicators of stress, and smoking status. Interpersonal ethnic discrimination was associated with a greater likelihood of being a current versus former smoker. Among current smokers, both forms of discrimination were associated with higher nicotine dependence. This association was stronger among men with low social support. Coping efficacy did not moderate the association between ethnic discrimination and smoking outcomes. We conclude that the EOD-A and the new IGD measure have good psychometric properties, which make them useful for assessing ethnic discrimination among Arab male current and former smokers in Israel. Further, ethnic discrimination, a social stressor, should be considered in efforts to improve smoking outcomes among Arab male smokers in Israel.

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## LIST OF ABBREVIATIONS

CFA .....	Confirmatory Factor Analysis
CFI.....	Comparative Fit Index
EFA .....	Exploratory Factor Analysis
EOD .....	Experiences of Discrimination scale
EOD-A.....	Experiences of Discrimination scale - Adapted
IGD.....	Institutional Group Discrimination
RMSEA.....	Root Mean Square Error of Approximation
SEM .....	Structural Equation Modeling
TLI.....	Tucker Lewis Index

## CHAPTER 1

### INTRODUCTION

This dissertation consists of two research studies that result in two separate manuscripts. In both studies, we make use of the same data set of adult Arab male current and former smokers from Israel but we answer different specific aims in each one. The first study examines the psychometric properties of measures to assess experiences with and perceptions of ethnic discrimination. This study is guided by literature on psychometric testing and previous research on measurement of ethnic discrimination. The second study uses the same measures of ethnic discrimination to examine the link between ethnic discrimination and smoking-related outcomes among Arab male current and former smokers and is guided by concepts from the stress process model. What follows is an introduction to each study.

#### 1.1 OVERALL INTRODUCTION

Discrimination refers to “the process by which a member, or members, of a socially defined group is, or are, treated differently (especially unfairly) because of his/her/their membership in that group” (Jary & Jary, 1995) (p. 169) Discrimination

on the basis of race or ethnic origin, hereafter referred to as “ethnic discrimination,” is a social stressor that has been linked to poorer mental and physical health outcomes (Gee, Ryan, Laflamme, & Holt, 2006a; Gee, Spencer, Chen, & Takeuchi, 2007; Krieger & Sidney, 1996; Paradies, 2006; Pascoe & Smart Richman, 2009; Williams, Neighbors, & Jackson, 2003; Williams & Mohammed, 2009) and to smoking behavior. The odds of smoking are significantly higher among those who report experiencing discrimination compared to those who did not experience discrimination (Chae et al., 2008; Purnell et al., 2012). Little is known, however, about the relationship between ethnic discrimination and other smoking related outcomes such as the level of nicotine dependence and cessation related outcomes among current or former smokers. Furthermore, most studies, focused on either the measurement of ethnic discrimination or discrimination effects on smoking behavior, have been conducted in western countries, particularly in the United States, the UK, Canada, and Australia (Bastos, Celeste, Faerstein, & Barros, 2010; Brondolo et al., 2005; Chae et al., 2008; Harris et al., 2006; Kreiger et al., 2005; Purnell et al., 2012; Utsey, 1998) and may have limited generalizability to non-western societies. Further, these studies focused solely on assessing self-reported discrimination at the interpersonal level and no studies to date have examined the effect of other forms of ethnic discrimination than interpersonal on smoking behavior of members of ethnic minorities. In Israel, the indigenous Palestinian Arab minority is subject to various forms of ethnic discrimination, at the interpersonal and institutional levels (Abu-saad, 2004; Golan-Agnon, 2006; Lewin, Stier, & Caspi-Dror, 2006; Molavi, 2009; Semyonov & Lewin-Epstein, 2011). In addition, Arab men smoke at

a higher rate and higher intensity compared to Jewish men (Ministry of Health [MOH], 2015). Understanding the social factors that may influence smoking behavior among Arab men is critical step to reducing smoking prevalence in this population. In this study, we establish the psychometric properties of measures to assess two forms of ethnic discrimination against Arabs in Israel, self-reported experiences of interpersonal ethnic discrimination and perceptions of institutional group discrimination, and we examine whether both forms are associated with smoking-related outcomes among Arab male current and former smokers.

## **1.2 STUDY 1: PSYCHOMETRIC PROPERTIES OF MEASURES TO ASSESS ETHNIC DISCRIMINATION: A STUDY OF ARAB MALE CURRENT AND FORMER SMOKERS IN ISRAEL**

Valid measurement of ethnic discrimination among Arab male current or former smokers in Israel is critical to our ability to study how ethnic discrimination is associated with smoking-related outcomes in this population. There are several existing instruments that have been widely used in studies on ethnic discrimination and health. Our ability of use those measures in research on ethnic discrimination and health in Arab populations is hampered by some limitations. First, existing measures to assess ethnic discrimination have been developed primarily in the United States in the English language, specifically to study the experiences of African Americans (Bastos et al., 2010; Brondolo et al., 2005; Utsey, 1998). Given that experiences of ethnic discrimination differ qualitatively from one country to another and from one ethnic group to another (Thrasher, Clay, Ford, & Stewart, 2012), existing measures developed in the United



States need to be culturally and linguistically adapted to capture experiences of ethnic discrimination in other societies (Borsa, Damásio, & Bandeira, 2012; Hambleton, Merenda, & Spielberger, 2005) or the development of new culturally sensitive measures is needed. Second, ethnic discrimination can occur at multiple levels, including both interpersonal and institutional levels. Interpersonal ethnic discrimination refers to discriminatory actions perpetrated by individuals towards individuals of another race or ethnic group (Krieger, 1999). Studies investigating the impact of ethnic discrimination on health in many countries including the U.S, the U.K, and few studies in Israel have focused primarily on assessing interpersonal experiences of ethnic discrimination (Baron-Epel, Kaplan, & Moran, 2010a; Harris et al., 2006; Karlsen & Nazroo, 2002; Krieger & Sidney, 1996). Another important form of ethnic discrimination that has rarely been studied in relation to health outcomes in Israel or elsewhere, is institutional discrimination against one's ethnic group. Institutional discrimination refers to discriminatory policies or practices carried out by institutions and is likely to harm the economic and social well-being of ethnic minority groups by limiting their opportunities for income, wealth, education, and employment (Krieger, 1999). Limited economic and social opportunities may in turn, contribute to higher stress levels experienced by members of ethnic groups.

### **Purpose of Study 1**

Valid measurement of both forms of ethnic discrimination (interpersonal and institutional) among Arabs in Israel is critical first step to studying its causes and effects and its association with smoking related outcomes. No culturally appropriate measures

to assess either form of ethnic discrimination in the Arabic language exist. Few studies in Israel assessed interpersonal ethnic discrimination in samples of the Arab population, however, the validity of these measures is unknown and their psychometric properties have not been established or reported. The purpose of this study was to evaluate the psychometric properties of two instruments to assess experiences of interpersonal ethnic discrimination and perceptions of institutional group discrimination among Arab participants' citizens of Israel. The "Experiences of Discrimination" scale was adapted (EOD-A) to assess interpersonal ethnic discrimination and a new measure was developed to assess perceptions of institutional discrimination against Arabs as an ethnic group. Factor analysis approaches were used to assess the factor structure of each instrument and Cronbach's alpha was calculated to assess their reliability. Lastly, unadjusted linear regression models were estimated in which ethnic discrimination was regressed on other constructs to assess the measures' construct validity. This paper will add to the literature evidence of the validity of measures to assess two potentially related but also distinct forms of ethnic discrimination that can be used in future research to assess ethnic discrimination in Arab samples in Israel.

### **1.3 STUDY 2: ETHNIC DISCRIMINATION AND SMOKING-RELATED OUTCOMES AMONG CURRENT AND FORMER ARAB MALE SMOKERS IN ISRAEL: THE MODERATING EFFECTS OF COPING EFFICACY AND SOCIAL SUPPORT**

Tobacco use is a major risk factor for diminished health and mortality. Understanding factors associated with smoking and with achieving successful abstinence is important if we want to reduce disparities in smoking prevalence. Many

studies have shown that ethnic discrimination, as a social stressor, is associated with higher odds of smoking (Bennett, Wolin, Robinson, Fowler, & Edwards, 2005; Chae et al., 2008; Harris et al., 2006; Paradies, 2006). Few studies in the United States also show that discrimination is associated with other smoking-related outcomes such as lower likelihood of successful cessation and higher levels of nicotine dependence (Kendzor et al., 2014a; Kendzor et al., 2014b). Because studies on ethnic discrimination and smoking were conducted primarily in western countries, the generalizability of this body of research to other non-western societies might be limited. Further, the vast majority of studies on discrimination, smoking, and other health outcomes focus on personal experiences with ethnic discrimination, neglecting potential effects of other forms of discrimination such as perceptions of discrimination at the institutional level against one's entire ethnic group.

In this study we examine the association between two forms of ethnic discrimination, experiences of interpersonal ethnic discrimination and perceptions of institutional group discrimination, and smoking-related outcomes, in a non-western context, that of Arab citizens of Israel. Arab citizens of Israel are the indigenous and largest ethnic minority group in Israel and are subject to ethnic discrimination at both the interpersonal and institutional level because of their ethnic origin as non-Jews in a Jewish dominated state (Abu-saad, 2004; Adalah, 2011; Adalah, 2012; Coalition against Racism in Israel (CAR), 2013; Golan-Agnon, 2006; Molavi, 2009; Rouhana & Sultany, 2003; Rouhana, 2006). Furthermore, among Arab men, smoking prevalence is twice as high compared to Jewish men (46.6% and 23.1% for Arab and Jewish men in 2014,

respectively) (MOH, 2015). In fact, smoking rates have been decreasing among Jewish men but have remained stable or increased among Arab men (MOH, 2015). In addition, among smokers, smoking intensity is higher among Arab male smokers than among Jewish male smokers (MOH, 2015). Whether ethnic discrimination as a source of social stress is associated with smoking outcomes in this population is the focus of this study.

### **Theoretical Guidance**

We draw upon the stress process model (Pearlin, 1989) to understand the relationship between interpersonal experiences of discrimination and perceived institutional group discrimination and smoking status and nicotine dependence among Arab men current and former smokers. The stress process model has often been employed as an overarching framework to understand the link between discrimination and health. This model posits that discrimination on the basis of ethnic origin is a social stressor, a condition or an experience that can exceed and challenge the adaptive capacities of people (Pearlin, 1989; Pearlin, 2010). Ethnic discrimination in turn is associated with greater odds of engaging in unhealthy behaviors, including smoking. Smoking, whether as a new behavior adopted by a nonsmoker or as a continued habit of a current smoker, may serve as a way to alleviate negative emotions and cognitions associated with exposure to discrimination (Bennett et al., 2005; Landrine & Klonoff, 1996; Pascoe & Smart Richman, 2009; Purnell et al., 2012). Furthermore, the model recognizes the role of personal and social resources in explaining why people exposed to similar stressors do not necessarily suffer the same deleterious health consequences (Pearlin, 2010). That is, the link between ethnic discrimination and smoking related

outcomes may depend on the personal (e.g., coping style, coping efficacy, self-esteem, and mastery) and social resources (e.g., social support) available to the individual facing discrimination. Variations in personal and social resources can influence the way a person copes with stressful experiences and whether the person resorts to any form of tobacco use as a way of coping.

### **Purpose of Paper 2**

Ethnic discrimination against Arabs in Israel is increasing and there is a need to understand how ethnic discrimination is associated with health behavior in this population. Also, the vast majority of studies on discrimination, smoking, and other health outcomes focused on personal experiences with ethnic discrimination, neglecting potential effects of other forms of discrimination such as discrimination at the institutional level against one's entire ethnic group. The purpose of this study is to examine the association between two forms of ethnic discrimination (i.e., self-reported experiences of interpersonal ethnic discrimination and perceptions of institutional group discrimination) and smoking status and nicotine dependence among Arab men from Israel who are current and former smokers. We hypothesize that greater interpersonal and greater perceived institutional group discrimination will be significantly positively associated with smoking status and nicotine dependence. Consistent with the stress process model, we consider whether coping efficacy and social support moderate these relationships. We hypothesize that social support will have a buffering effect such that the relationship between each form of ethnic discrimination and smoking outcomes will be weaker for men with high social support

than for men with low social support. We also hypothesize that the relationship between each form of ethnic discrimination and smoking status and nicotine dependence will vary across levels of coping efficacy. This paper will add to the literature an analysis that applies concepts of the stress process model in a new context “the Israeli context”. Moreover, this paper will add to the literature an analysis that has been neglected in the discrimination and health literature: the association between perceptions of institutional group discrimination against Arabs as an ethnic minority and smoking-related outcomes.

## CHAPTER 2

### BACKGROUND AND SIGNIFICANCE

Chapter 2 provides the background on Arabs as an ethnic minority in Israel, evidence for ethnic discrimination against them at both the interpersonal and institutional level and their smoking behavior. Chapter 2 also summarizes the available evidence from previous research on the association between ethnic discrimination, health in general, and smoking related outcomes and introduces the stress process model as the central framework that guides this study.

#### 2.1 THE ARAB ETHNIC MINORITY IN ISRAEL

##### A Historical Perspective

We begin with a short historical outlook on how Palestinian Arabs became an ethnic minority within the state of Israel. A historical perspective provides a deeper understanding of the long-term processes through which ethnic social, economic, and health disparities are created, and how ethnic discrimination operates as a historically rooted “fundamental cause” of disease (Chowkwanyun, 2011). Israel was established in 1948, however, the settlement of Jewish people in historic Palestine began in the late 1800’s (Manna', 2013; Pappé, 2006). Historic Palestine was under the rule of the Ottoman Empire until 1918 (Pappé, 2006) and was later occupied by Britain whose

1917 Balfour declaration supported the establishment of a Jewish national home in Palestine (Manna', 2013; Pappe, 2006). Despite Palestinians' demands for independence and their opposition to Jewish immigration to Palestine, waves of Jewish immigration continued throughout the 19th century, increasing the size of the Jewish population in Palestine (Pappe, 2006).

The British rule in Palestine ended in 1947 and the United Nations (UN) adopted and recommended Resolution number 181 to partition Palestine to a Jewish and Arab state (Manna', 2013; Pappe, 2006). In the same year, mass expulsions by the Jews of the indigenous Palestinian Arab population began in Palestine (Pappe, 2006), and in February 1948, the execution of "Plan Dalet" (i.e., the Zionist blueprint for the systematic and total expulsion of Palestinians from their homeland) began and a war was unleashed between Arabs and Jews (Pappe, 2006). Between March and November 1948, thousands of Palestinians were killed or expelled from their villages under planned military operations conducted by the "Hagana" (i.e., a Zionist underground military organization) (Pappe, 2006). As a result, 85% of the Palestinians living in the areas that later became the state of Israel became internally displaced within Israel or refugees in other countries (BADIL - Resource Center for Palestinian Residency & Refugee Rights; 2009; Pappe, 2006). The displacement process of the Palestinian people was executed by military operations, dozens of massacres, and the confiscation of land and properties belonging privately and collectively to the Palestinians (BADIL, 2009; Pappe, 2006).



Following the war and after Israel declared its independence as the “State of the Jewish People” in 1948, Palestinians who survived the atrocities of the war and the forced evictions were displaced and scattered. Around 156,000 Palestinians who Israel had failed to expel from Palestine and most of whom were internally displaced, became an Arab minority in the Jewish state and were subjected to an Israeli military regime until 1966 (BADIL, 2009; Manna', 2013; Masalha, 2005; Pappé, 2011). Palestinians who fled to the West Bank and the Gaza Strip (i.e., currently the only two Palestinian territories referred to as Occupied Palestinian Territory (OPT) were under foreign non Palestinian Arab occupation. The rest of the Palestinian people were scattered throughout the neighboring Arab countries (e.g., Jordan, Lebanon, Egypt, Syria, Iraq) where they found shelter in tents provided by international aid organizations (Manna', 2013; Pappé, 2006). Today these Palestinian refugees live in refugee camps in the host countries. At the beginning of 2007, there were approximately seven million Palestinian refugees around the world and 450,000 internally displaced persons (IDPs), representing 70% of the entire Palestinian population worldwide (9.8 million) (BADIL, 2009). Hence, the day Israel commemorates its independence is the day that the Palestinian people around the world grieve for their “Nakba” or “Catastrophe” for the destruction of Palestine and the massive displacement of Palestinians by Israel in 1948 (BADIL, 2009; Masalha, 2005).

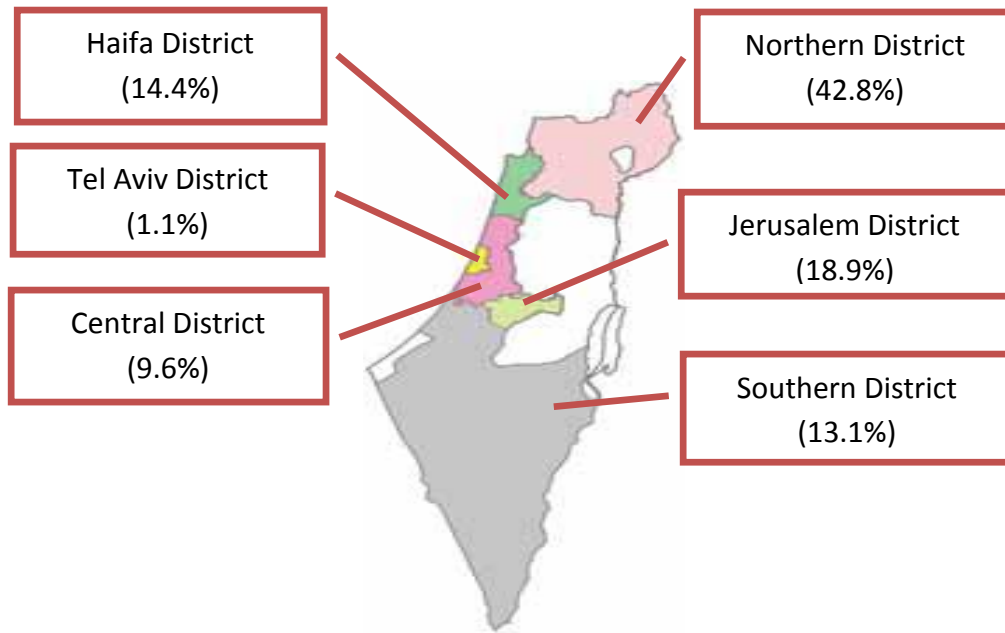
### **The Arab Ethnic Minority in Israel Today**

By 2015, the total population of Israel numbered about 8.3 million inhabitants, of which 74.9% were Jews and 20.7% were Palestinian Arabs (Central Bureau of

Statistics [CBS], 2015). Arabs in Israel differ from the Jewish majority in almost every aspect of life including language, religion, culture, lifestyle, and traditions. Arabs in Israel belong to three main religious groups: Muslims (84.3%), Christians (7.7%) and Druze (8.0%) (CBS, 2013). The Arab population in Israel is younger compared to the majority Jewish population. Forty-five percent of the population is between 0 and 18 years old and about half of the population (51.1%) is between 19 and 65 years old. Only 4.2% of Arabs are older than 65 years (CBS, 2013). Since Arabs became legal citizens of the state of Israel, substantial improvements in their health status have been observed. For example, indicators such as infant mortality (Amitai et al., 2005) and life expectancy (Chernichovsky, & Anson, 2005; Na'amnih, Muhsen, Tarabeia, Saabneh, & Green, 2010) have improved. Also, Arabs in Israel report better health compared to Arabs living in neighboring countries.

Despite these improvements and despite Arabs' status as citizens of Israel, social, economic, and health disparities continue to exist between them and the dominant Jewish majority (Adalah, 2011; Semyonov & Lewin-Epstein, 2011). In comparison to Jewish Israelis, Arabs earn less, complete less education, and are employed at lower rates (Abu-saad, 2004; Adalah, 2011; Semyonov & Lewin-Epstein, 2011), all of which place them in a disadvantaged economic position. The majority of Arabs in Israel reside in the northern part of the state in segregated, homogenous Arab towns that are underdeveloped compared to Jewish residential areas (see Figure 2.1) (Adalah, 2011; Bar-On, 1994; CBS, 2011; Khamaisi, 2004; Khamaisi, 2006). Gaps in health status also exist between Arabs and Jews in Israel. Arabs have higher morbidity and

mortality rates compared to the Jewish population. In 2012, the average life expectancy of Arab men and women in Israel was approximately four years lower than the life expectancy for Jewish men and women (i.e., 76.9 years versus 80.6 years, for Arab and Jewish men, and 80.7 and 84.0 years, for Arab and Jewish women, respectively) (CBS, 2013). Despite improvements in health status of Arabs in Israel over the years, gaps in health status between Arabs and Jews continue to be evident in other health indicators as well, including infant mortality and the prevalence of chronic diseases and disability (Amitai et al., 2005; Azaiza & Brodsky, 2003; Osman & Walsemann, 2013). For example, in 2012, the average infant mortality rate among Arabs was more than double that of the Jewish majority (6.5 versus 2.7 per 1,000 live births, for Arabs and Jews, respectively) (CBS, 2013). Cultural and life style related factors might explain some of the gaps in health status between Arabs and Jews in Israel; however, the role of social and economic factors in producing health disparities in Israel should not be overlooked. Exposure to social stressors such as prejudice and discrimination and lower socioeconomic status for Arabs as an ethnic minority in a Jewish dominated state may explain, at least in part, ethnic health disparities between Arabs and Jews in Israel.



**Figure 2.1** The State of Israel, by District and Percentage of Palestinian Arab Residents. Central Bureau of Statistics. Israel in Figures (2013)

## 2.2 ETHNIC DISCRIMINATION AGAINST ARABS IN ISRAEL

### Definitions of Discrimination

Broadly, discrimination refers to “all means of expressing and institutionalizing social relationships of dominance and oppression” (Krieger, 1999) (p. 301). According to the Collins Dictionary of Sociology “discrimination” is defined as “the process by which a member, or members, of a socially defined group is, or are, treated differently (especially unfairly) because of his/her/their membership of that group” (Jary & Jary, 1995) (p. 169). The Concise Oxford Dictionary of Sociology extends that definition so that discrimination involves not only “socially derived beliefs each [group] holds about the other” but also “patterns of dominance and oppression, viewed as expressions of a struggle for power and privilege” (Marshall, 1994) (p. 125–126). That is, people and institutions that engage in discriminatory actions restrict the lives of those against whom they discriminate (Krieger, 2001) by practicing ways to maintain privileges through subordinating the groups they oppress. Such practices are justified by “ideologies revolving around notions of innate superiority and inferiority, difference, or deviance” (Krieger, 2001) (p. 693). A predominant form of discrimination is racial\ethnic discrimination, defined as “any distinction, exclusion, restriction or preference based on race, color, descent, or national or ethnic origin which has the purpose or effect of nullifying or impairing the recognition, enjoyment or exercise, on an equal footing, of human rights and fundamental freedoms in the political, economic, social, cultural, or any other field of public life” (Schwelb, 1966) (p. 1001).

## Aspects of Ethnic Discrimination

Ethnic discrimination can have multiple forms: interpersonal or institutional; legal or illegal; overt or covert (Krieger, 2001). It can involve stigmatization, exclusion, social distancing, harassment, violence or other acts (Contrada et al., 2001; Krieger, 1999) and can be expressed verbally or non-verbally in violent, mental, physical, or sexual acts (Krieger, 2001). Ethnic discrimination can occur in almost every domain of life, such as in public places, schools, workplaces, medical care settings and other public or private service encounters (Krieger, 2001). Other domains where discrimination can be expressed are by the media, the police or the justice system or other public agencies or social services (Krieger, 2001). Important aspects of discrimination include the cumulative exposure to discrimination, the timing of exposure to discrimination (i.e., intrauterine period; infancy; childhood; adolescence; or adulthood), and the intensity and frequency of exposure and its duration (Krieger, 2001). Severe, more chronic exposure to discrimination is hypothesized to have a more harmful effect on one's life and health (Krieger, 2001).

The two most commonly studied forms of ethnic discrimination are "interpersonal" and "institutional ethnic discrimination". Interpersonal ethnic discrimination encompasses prejudice and discriminatory actions perpetrated by individuals towards individuals of another race or ethnic group. Prejudice is defined as differential assumptions about the abilities, motives, and intents of others by "race" or "ethnic origin" while discriminatory actions are differential actions towards others by "race" or "ethnic origin" (Jones; 2000). Institutional ethnic discrimination, on the other

hand, refers to discriminatory policies or practices carried out by institutions against members of ethnic groups (Krieger, 1999).

### **Ethnic Discrimination in Israel**

Israel is a multiethnic society, a feature that adds to the complexity of investigating the role of ethnic discrimination in creating ethnic health disparities. Though Jews and Arabs are the two major ethnic groups in Israel, the Jewish majority itself is ethnically heterogeneous. Cultural differences as well as differences in power and access to state resources exist between Jewish ethnic groups. For example, Ashkenazi Jews (i.e., those of European or American descent), appear to be wealthier and have more power and access to resources than Sepharadim\Mezrahim (i.e., Jews originating mostly from North Africa and Middle Eastern countries but also Spain and Portugal) (Semyonov & Lewin-Epstein, 2011). Other Jewish ethnic groups that are more disadvantaged compared to Ashkenazi Jews include Ethiopian Jews, and Russian Jews who immigrated to Israel after the fall of the former Soviet Union. Ethnic discrimination appears to prevail between ethnic groups within the Jewish majority as well (CAR, 2012). Generally, Ashkenazi Jews are the most privileged group of Jewish citizens in Israel and Jews of other descent are more marginalized socially, economically and politically. These disparities are at least in part the result of ethnic discrimination, however, the most intense level of discrimination in Israel occurs among non- Jewish ethnic minorities, such as Arabs (CAR, 2012).

## **Evidence for Ethnic Discrimination against Arabs in Israel**

Since its establishment in 1948, Israel was defined as “the State of the Jewish People”. As a result, Palestinian-Arabs in Israel live in paradoxical circumstances as non-Jewish citizens in a “Jewish state” (Molavi, 2009; Rouhana & Sultany, 2003). They live in a systematically inferior economic and political position compared to Jews and face multifaceted ethnic discrimination on the basis of their national belonging (i.e., a person's sense of belonging to one state or to one nation regardless of his\her citizenship status), and ethnic and religious affiliation as non-Jews (Adalah, 2011; Molavi, 2009; Pappé, 2011). In addition, Arabs’ ethnic identity as Palestinians and their relation to the Palestinians in the Occupied Palestinian Territory (OPT) and other Arab countries (Adalah, 2011), add to the complex relationship between them and the Jewish population in Israel and contribute to aggravating ethnic discrimination against them. An examination of the literature reveals that discrimination against Arabs in Israel operates on both the interpersonal and institutional level and pervades every sphere of Israeli society (Abu-saad, 2004; Golan-Agnon, 2006; Molavi, 2009; Rouhana & Sultany, 2003; Rouhana, 2006).

## **Evidence for Interpersonal Ethnic Discrimination against Arabs in Israel**

Interpersonal ethnic discrimination refers to “directly perceived discriminatory interactions between individuals whether in their institutional roles or as public and private individuals” (Krieger, 1999) (p. 301). Interpersonal ethnic discrimination refers to the individual’s self-reports of exposure to discriminatory interactions (Krieger, 1999). Events of interpersonal ethnic discrimination against Arab citizens include, but are not



limited to, racist derogatory statements, refusal of services (e.g., refusal to rent an apartment to an Arab, refusal to employ an Arab), harassment and physical violent attacks, and unfair treatment by security forces (e.g., the police and airport security). According to the Coalition against Racism in Israel (CAR) (2013), in 2013 there was a 10% increase in racist incidents in Israel compared to the year 2012. A total of 114 incidents of racism between citizens were recorded in 2013 compared with 54 in the previous year, with a tripling of events on the part of Jewish citizens against Arab citizens (63 cases reported compared with 20 cases reported in the preceding year) (CAR, 2013). There were 125 cases of racism against Arabs in government institutions, private businesses, and public and private organizations in 2013 compared to 64 in 2012 (CAR, 2013). It is important to note that the low numbers of reported interpersonal discriminatory events against Arabs most likely are an underestimation of the real magnitude of interpersonal ethnic discrimination against Arabs in Israel. CAR relies on media coverage of discriminatory cases and on individuals' reporting of such incidents, however, CAR estimates that tens of other incidents occurring each year were not covered by the media or brought directly to CAR (CAR, 2012).

Studies that use random sample of Arabs in Israel reveals higher prevalence of self-reported experiences of interpersonal ethnic discrimination. For example, a study that used a random sample of 900 Palestinian Arabs from Israel found that about 40% of the sample reported facing discrimination sometimes, frequently or often because of their ethnicity as Arabs (Daoud, Shankardass, O'Campo, Anderson, & Agbaria, 2012). In another study that sampled Jews, Arabs, and immigrants from the former Soviet Union,

40.5% of Arabs in the sample reported at least some experience of ethnic discrimination. Reports of interpersonal ethnic discrimination were highest in the areas of employment and education, in public places and public institutions (about 20%) and the lowest in settings of obtaining housing and using the healthcare system (about 7%) (Baron Epel et al., 2010a). It is important to note that the latter study used a random telephone survey which might have led to underreporting of discriminatory experiences by Arab participants via phone (Baron Epel et al., 2010a).

Racist incitements made by public leaders in Israel against Arabs also help spur an increase in racist incidents by Jewish citizens against Arab citizens. In 2013, there was a significant increase in racist statements made by elected persons with 45 cases of incitements against Arabs compared to 26 in the prior year (CAR, 2013). Furthermore, CAR reports increases in cases of racist incitement against Arabs in other spheres such as sport stadiums (i.e., 78 cases and 55 cases, in 2013 and 2012 respectively), Russian and Hebrew media outlets, and social networks.

Another indicator of the magnitude of interpersonal ethnic discrimination against Arabs in Israel comes from public opinion polls surveying the views of the Jewish public toward Arab citizens and their rights. Such polls reveal a picture of increasing intolerance towards Arabs in Israel. For example, according to the Israel Democracy Institute, in 2010, 53% of the Jewish public maintained that the state was entitled to encourage Arabs to emigrate from Israel. About a third of the Jewish population does not consider Arab citizens "Israelis" (The Israel Democracy Institute, 2011). In another survey, a majority of Jewish respondents (58%) felt that Israel's Arab citizens are not

discriminated against, while a majority of the Arab respondents (75%) held that they were subject to discrimination (The Israel Democracy Institute, 2012). Moreover, when asked about the sense of feeling part of the state and its problems, a much lower percentage of Arabs reported feeling this way compared to Jews (73% and 28%, for Jews and Arabs, respectively) (The Israel Democracy Institute, 2012).

In summary, Palestinian Arab citizens in Israel face interpersonal discrimination because of their ethnic origin and nationality. Interpersonal discriminatory incidents and expressions against Arabs in Israel are increasing; however, most go unreported and undocumented. Documenting interpersonal discriminatory incidents that members of ethnic minorities endure is important and serves as key strategy to expose the gravity and continuity of ethnic discrimination in Israel.

### **Evidence for Institutional Ethnic Discrimination against Arabs as a group**

Another form of discrimination that Arabs in Israel face because of their ethnicity is institutional discrimination. Institutional discrimination refers to “discriminatory policies or practices carried out by state or non-state institutions” (Krieger, 1999) (p 301). Acts of institutional discrimination can be overt or covert and are likely to harm the economic and social well-being of ethnic minority groups and limit their opportunities for employment, income, and education (Krieger, 1999). Institutional ethnic discrimination, therefore, contributes to social, economic, and health-related ethnic inequalities (Krieger, 1999).

In Israel, gaps in income, education, and poverty rates between Arabs and Jews are directly related to institutional discrimination against Arabs (Adalah, 2011). Many

laws and policies work to preserve the Jewish character of the state and exclude the Arab minority from state resources and power structures (Adalah, 2011; Pappé, 2011; Rouhana & Sultany, 2003). Therefore, Arabs in Israel tend to be disadvantaged in almost every aspect of socio-economic stratification (Lewin et al., 2006). For example, in 2008, the average gross monthly income among Arabs in Israel was around 32% lower than the average gross monthly income among Jews (Adalah, 2011). In 2009, 53.5% of all Arab families in Israel were classified as poor compared to 20.5% of all families in Israel (i.e., Arabs and Jewish families). Poverty is even higher among Arab Bedouin families, reaching 67.2% (Adalah, 2011).

There are numerous examples of specific discriminatory policies that actively promote the channeling of resources to Jewish citizens thereby aggravating the socioeconomic gaps between Arabs and Jews (Adalah, 2011; Bar-On, 1994 ;Rouhana & Sultany, 2003). The first example is related to the use of the military-service criterion as a condition for employment. Since the majority of Arabs in Israel do not serve in the military, many Jewish employers and business owners in Israel use this criterion to exclude Arabs from their labor force often when there is no link between the nature of the work and military experience (Adalah, 2011). Thus, Arabs in Israel have far less work opportunities compared to their Jewish counterparts. The same “military-service criterion” is used in Israel's child benefit system to actively allocate more resources to Jewish families. Beginning with the third child, this system provides a “veterans’ child allowance” to families with a relative who served in the military. Since, the majority of Arabs are not, by law, required to and do not serve in the military, they are ineligible for

such an allowance and for many other benefits offered exclusively to soldiers and veterans (Bar-On, 1994; Rouhana & Sultany, 2003).

Israel is characterized by extreme segregation between Arabs and Jews. Arabs tend to live in poorer, more rural and less developed residential areas compared to Jewish localities (Adalah, 2011; Lewin et al., 2006; Khamaisi, 2004; Khamaisi, 2006). In Israel, local councils and municipalities are ranked on a ten point socio-economic scale, where cluster 10 represents the wealthiest localities, and cluster 1 represents the poorest ones. Eighty-seven percent of Arab localities in Israel rank within clusters 1-3 and none of them rank within clusters 7-10 (i.e., the most well off localities) (Adalah, 2011).

Factors that contribute to producing gaps in socioeconomic ranking between Arab and Jewish localities include lower earnings for Arabs that lead to a lower tax base, few Arab-owned industries, and discrimination against Arabs by the government through inequitable allocation of economic resources (Bar-On, 1994). An example of the later is the designation of “National Priority Areas” (NPAs) (Adalah, 2010). According to “The Economic Efficiency Law (Legislative Amendments for Implementing the Economic Plan for 2009-2010) (2009)” the government is granted extensive discretion to classify towns, villages and wider areas as NPAs and subsequently to allocate enormous state resources to them, even without the obligation to announce criteria for or against their inclusion (Adalah, 2011; Adalah, 2012). Since 1998, 553 Jewish towns and only four Arab villages were classified as NPAs (Adalah, 2010).

NPAs are entitled to significant financial benefits provided by the government. Those include, but are not limited to, reductions in the price of land; generous loans for the purchase of apartments; significant price reductions in leasing land; incentives for teachers and subsidized transportation to school provided by the ministry of education; grants for investors, development of infrastructure for industrial zones; and reductions in income tax for individuals and companies (Adalah, 2011). Moreover, Arab municipalities exercise jurisdiction over only 2.5% of the total land of the state of Israel. Since 1948, the State of Israel has established approximately 600 Jewish municipalities, whereas no new Arab town or city has ever been built (Adalah, 2011). An amendment to the “Land Ordinance Law” from February 2010, confirms state ownership of land confiscated from Arab Palestinians and blocks their restitution claims of their land (Adalah, 2011).

Many other policies in Israel keep Arabs segregated from Jewish residential areas. For example, admissions committees operate in approximately 700 Jewish towns and filter out Arab applicants on the basis of their “social unsuitability” from future residency in these towns (Adalah, 2011). Discriminatory policies are also practiced against Bedouin Arabs in the southern part of Israel, where the state refuses to afford recognition to Bedouin villages, many of which predate the establishment of Israel (Adalah, 2011). Between 75,000 and 90,000 Arab Bedouins live in the unrecognized villages in the Naqab area, whom the state characterizes as “trespassers on state land” (Adalah, 2011). Israel is currently intensifying its efforts to forcibly evacuate the

unrecognized villages in the south using extreme measures such as demolishing entire villages (Adalah, 2011).

The education system is another example where institutional discrimination against Arabs operates. The Ministry of Education in Israel retains centralized control over the form and substance of the curriculum taught in Arab schools, with Arab educators having little to no influence over the content of the curriculum (Abu-saad, 2004). The curriculum emphasizes Jewish history and culture and excludes the teaching of Palestinian history (Abu-saad, 2004; Adalah, 2011). In addition, state funding to Arab schools in Israel falls far behind that provided to Jewish schools (Abu-saad, 2004; Golan-Agnon, 2006). The state provides three times as much funding to Jewish students as to Arab students. This underfunding is reflected in many areas, such as large class sizes and poor infrastructure and facilities in Arab schools (Adalah, 2011; Golan-Agnon, 2006). Moreover, Arab students are dramatically underrepresented in Israel's universities and other institutes of higher education (Golan-Agnon, 2006). The percentage of Arab students who graduate from high school with matriculation certificates and meet the requirement to enroll in higher education is far less than the percentage of Jewish students (Adalah, 2011; CBS, 2008). In fact, Arab academics constitute only about 1.2% of all tenured and tenure-track positions in Israeli universities (Abu-saad, 2004; Adalah, 2011). The situation in the unrecognized Arab Bedouin villages in the Naqab is even worse, where there are few elementary schools that are severely overcrowded and poorly-equipped, and not a single high school (Adalah, 2011). In sum, discriminatory practices and the under-investment in Arab schools in Israel are important factors that

sustain the gaps between the Jewish majority and the Arab minority in educational attainment and socioeconomic status.

Arab employees in Israel are underrepresented in spheres such as the judiciary, the legislature, and government and civil service (Adalah, 2011). Therefore, Arabs have limited power and diminished access to decision-making processes, which limit their ability to rectify inequalities between them and the Jewish majority. Furthermore, the criminal justice system is regularly used as a means of delegitimizing political acts and expression by Arab citizens of Israel and their elected political leadership. For example, several Arab members of the Knesset have been prosecuted or had their parliamentary privileges revoked for legitimate political activities and speech that falls within the scope of their work as elected representatives of the Arab minority (Rouhana & Sultany, 2003). The right-wing political parties have attempted repeatedly to disqualify Arab parties and members of the Knesset from the Knesset, thereby limiting the Arab political voice in the legislature (Rouhana & Sultany, 2003).

Interactions with the police and security forces are another setting where Arabs routinely encounter discriminatory treatment that reflect discriminatory institutional policies. For example, anti-war demonstrations by Arabs in Israel are routinely and disproportionately encountered by systematic mass arrests and violent treatment by the police (Adalah, 2011). In addition, Arabs are routinely profiled based on their ethnicity by the security forces at Israel's Ben Gurion airport (The Arab Association for Human Rights, 2006). Compared to brief security checks for Jewish passengers, Arabs routinely face extended questioning and interrogation, and may be "accompanied" by



security personnel from check-in to the gate, or to the plane itself. Acts of discriminatory treatment by the airport security reflect the perception of Arabs as a security threat (The Arab Association for Human Rights, 2006).

In summary, the indigenous Arab minority in Israel is subject to acts of institutional ethnic discrimination, many of which are overt and are built into laws that aim to preserve, emphasize, and cultivate a Jewish character of, and a Jewish majority in the state of Israel. Acts of institutional ethnic discrimination contribute to social, economic, and health disparities between Arabs and Jews in Israel. Institutional ethnic discrimination results in socioeconomic disadvantage and may increase stress levels, both of which might substantially contribute to the unhealthy behaviors among Arabs in Israel. Yet, there is a dearth of studies investigating the relationship between institutional ethnic discrimination and health behavior in this population.

### **2.3 ETHNIC DISCRIMINATION AND ITS ASSOCIATION TO HEALTH**

Ethnic discrimination has been linked to a range of mental and physical health outcomes. The most consistent association is found for negative mental health outcomes such as increased psychological distress, anxiety, and depression (Brown et al., 2000; Paradies, 2006; Williams & Mohammed, 2009). Ethnic discrimination is also associated with risk behaviors such as smoking and with self-reported and objectively measured negative physical health outcomes including high blood pressure (Armstead, Lawler, Gordon, Cross, & Gibbons, 1989; Clark, 2000; Clark, 2003; Fang & Myers, 2001; Gyll, Matthews, & Bromberger, 2001; Jones, Harrell, Morris-Prather, Thomas, & Omowale, 1996; Krieger & Sidney, 1996), low birth weight (Collins et al., 2000; Collins,

David, Handler, Wall, & Andes, 2004; Dole et al., 2003; Mustillo et al., 2004), obesity (Butler, Tull, Chambers, & Taylor, 2002; Gee, Ro, Gavin, & Takeuchi, 2008; Hunte & Williams, 2009; Tull et al., 1999), and increased risk for mortality (LaVeist, Sellers, & Neighbors, 2001).

Discrimination can affect health via multiple intertwined pathways. As Krieger (1999) states “discrimination creates and structures exposures to noxious physical, chemical, biological, and psychosocial insults, all of which can affect biological integrity at numerous integrated and interacting levels” (p. 332). Discrimination affects health through pathways that involve exposure, susceptibility, and biological and social responses to discrimination (Krieger, 1999). Some of these pathways are relevant to how interpersonal ethnic discrimination affects health. Others are relevant to how both interpersonal and institutional ethnic discrimination may operate to harm health. Those pathways can be summarized as follows:

*1. Socially inflicted trauma and stress:* Trauma that results from ethnic discrimination, mainly interpersonal ethnic discrimination, can involve mental, physical, or sexual trauma. It can range from verbal to violent expressions or acts (Krieger, 1999). Aside from physical harm caused by violent discriminatory acts, ethnic discrimination can harm health via the stress responses it evokes (Landrine, Klonoff, Corral, Fernandez, & Roesch, 2006; Lazarus & Folkman, 1984; Pascoe & Smart Richman, 2009; Thoits, 2010). Differential exposure to stress is a primary way in which SES, gender, and racial-ethnic inequalities in health are produced (Thoits, 2010). Ethnic discrimination acts as a social stressor. Cumulative exposure to interpersonal ethnic discrimination or chronic

exposure to institutional ethnic discrimination can lead to these stress responses being activated more often, potentially leading to a consistent negative emotional state (Pascoe & Smart Richman, 2009). Heightened stress responses—both physiological and psychological—can lead to mental and physical illnesses (Pascoe & Smart Richman, 2009).

*2. Economic and social deprivation:* Ethnic discrimination acts as a “primary stressor” that sets in motion “secondary stressors” in other life domains. Both institutional and work related interpersonal ethnic discrimination can limit opportunities for education, income, and employment for members of ethnic minority groups and thus result in ethnic minority groups living a socioeconomically disadvantaged position compared to the dominant group (Krieger, 1999). Socioeconomic disadvantage can harm health via multiple intertwined mechanisms such lack of material resources, lack of health insurance, and higher exposure to stress.

*3. Toxic substances and hazardous conditions:* Both interpersonal and institutional ethnic discrimination can lead to members of ethnic minority groups being exposed to toxic substances and hazardous work or living conditions (Krieger, 1999).

*4. Targeted marketing of legal and illegal psychoactive substances and other harmful commodities:* Exposure to ethnic discrimination has been associated with increased rates of smoking and drug use (Paradies, 2006). One pathway through which institutional ethnic discrimination can lead to increased risk behaviors among members of ethnic minority groups is via targeted marketing of harmful substances (Krieger, 1999). Institutional ethnic discrimination, however, could also be expressed in lack of

appropriate interventions and resources directed at reducing smoking rates among ethnic minority groups compared to resources invested for the same cause among the dominant ethnic group.

*5. Inadequate health care:* Interpersonal ethnic discrimination can take place between individuals in health care facilities, for example, if a member of an ethnic minority receives no treatment or inferior treatment because of his \her ethnicity. Institutional ethnic discrimination can translate into policies that lead to lower availability of health care facilities and \or providers available to members of ethnic minorities or lower health care quality for diagnosis or treatment delivered to members of ethnic minorities (Krieger, 1999).

### **Ethnic Discrimination and Health Outcomes: Research on Arabs in Israel**

Despite the pervasiveness of acts of ethnic discrimination against Arabs in Israel and the ample evidence for the influence of ethnic discrimination on health in studies around the world, few studies have examined the association between ethnic discrimination and health outcomes in the Palestinian Arab population in Israel, none of which examined smoking related outcomes. For example, in a study of Arabs and immigrant and non-immigrant Jews in Israel, Baron Epel and colleagues (2010a) found that self-reported experiences of ethnic discrimination were associated with physical and mental health related quality of life among Jews but not among Arabs. Those results were contrary to what was hypothesized since many studies have shown ethnic discrimination to be associated with adverse physical and mental health among ethnic minorities. Another study by Daoud and colleagues (2012) examined the association

between self-rated health and forced displacement that Palestinian Arabs in Israel endured during the 1948 war and its aftermath. The study found that internally displaced persons (IDPs) and their descendants had significantly lower self-rated health and they reported both more feelings of ethnic discrimination and higher levels of chronic stress compared to those who were not internally displaced (Daoud et al., 2012). Interestingly, IDPs and their descendants were more likely than those not displaced to identify as Palestinian, Palestinian-Arab, or Arab as compared to identifying as Israelis (Daoud et al., 2012). It could be that IDPs who were forcefully relocated and likely lost their land and home to the state of Israel are more sensitive about the way they are treated within Israeli society and as a result may be more aware of subtle forms of ethnic discrimination against Arabs.

Institutional ethnic discrimination has rarely been studied in relation to health outcomes among Arabs in Israel. For example, because of many institutional discriminatory policies, Arab Bedouins, residing in the south of Israel, are among the poorest and most disadvantaged groups in Israel. Land disputes between them and the Israeli government since the establishment of the state have resulted in hundreds of house demolitions of Bedouins every year. Daoud and Jabareen (2014) examined the association between house demolition, a discriminatory institutional practice carried out by the state, and mental health among Arab Bedouin women and found that threat of housing demolition was associated with higher depressive symptoms among women in this population (Daoud & Jabareen, 2014).

In sum, few studies have examined how ethnic discrimination may be associated with health-related outcomes among Arabs in Israel. More research is needed to determine the role of ethnic discrimination in influencing health outcomes and health behaviors in this population.

### **Ethnic Discrimination and Smoking Related Outcomes**

Tobacco use is a major risk factor for diminished health and mortality. It is the leading preventable cause of mortality in the United States, accounting for 1 of every 5 deaths (Danaei et al., 2009). The negative health consequences of smoking include chronic cardiovascular and respiratory diseases, several cancers, adverse reproductive effects, and increased risk for premature mortality (US Department of Health Human Services, 2004). Among smokers, smoking cessation at any stage of the smoker's life can improve health outcomes (Anthonisen et al., 2005; Lillington, Leonard, & Sachs, 2000) and greater smoking intensity and nicotine dependence are associated with lower odds of successful quitting (Hymowitz et al., 1997). Understanding factors associated with smoking and with achieving successful abstinence is important if we want to reduce disparities in smoking prevalence.

A positive association between ethnic discrimination and smoking behavior has been found in past research (Bennett et al., 2005; Borrell et al., 2010; Chae et al., 2008; Guthrie, Young, Williams, Boyd, Kintner, 2002; Landrine & Klonoff, 1999; Purnell et al., 2012). Persons who experience ethnic discrimination are more likely to smoke compared to persons who do not experience ethnic discrimination (Paradies, 2006). The positive association between ethnic discrimination and smoking is consistent across

various populations such as Asian Americans (Chae et al., 2008), African Americans (Bennett et al., 2005), Latinos in the United States (Lorenzo-Blanco & Cortina, 2013), and Maori, Asians, and Pacific ethnic groups in New Zealand (Harris et al., 2006). In Israel, smoking prevalence among Arab men is almost twice as high as among Jewish men (CBS, 2008; MOH, 2011) and smoking rates have been decreasing among Jewish men but have remained stable or increased among Arab men (CBS, 2008). In light of the disparities in smoking prevalence between Arab and Jewish men in Israel, it is important to understand the social factors that promote smoking among Arab men as well as factors associated with continued smoking and or reduced cessation possibilities in this population.

Studies on ethnic discrimination and smoking are concentrated mostly in western countries, particularly the United States, and may be limited in their generalizability to other non-western societies. Also, little is known about the relationship between ethnic discrimination and smoking outcomes among smokers. For example, among smokers, greater nicotine dependence is associated with lower odds of successful smoking cessation (Hymowitz et al., 1997), and, hence, may constitute a potential pathway through which discrimination influences health. Indeed, in the US those who experienced greater exposure to discrimination were less likely to achieve abstinence than individuals who experienced less discrimination (Kendzore et al., 2014a). Another US study found that everyday discrimination was positively associated with indicators of nicotine dependence among smokers from different ethnic groups. More specifically, discrimination was associated with the Heaviness of Smoking Index

among Latino smokers, and with the Brief Wisconsin Inventory of Smoking Dependence Motives (WISDM) scales among Latinos, African Americans, and white smokers (Kendzor et al., 2014b). Whether ethnic discrimination is associated with smoking-related outcomes among Arab male smokers has not been studied yet and is the focus of this study.

#### **2.4 PREVALENCE OF CIGARETTE SMOKING AMONG ARABS IN ISRAEL**

In 2014, smoking prevalence among persons aged 21 and older in Israel was 19.8% (MOH, 2015). Disparities in smoking prevalence in Israel exist by gender and by ethnicity. Overall, smoking prevalence was 27.3% for men and 12.6% for women, and 18.4% for Jews compared to 26.3% for Arabs (MOH, 2015). Smoking prevalence is highest among Arab men and lowest among Arab women compared to their Jewish counterparts (MOH, 2015). More specifically, in 2014, smoking prevalence was 23.1% and 14.0% among Jewish men and women, respectively, and 46.6% and 6.1% among Arab men and women, respectively (MOH, 2015). Although Arab men initiate smoking at older age (i.e., mean age of initiation 19.9 years) compared to Jewish men (i.e., 18.2 years), in all age groups, smoking prevalence is 1.5-2.2 times higher among Arab men compared to Jewish men (MOH, 2015). In fact, data on smoking rates over time in Israel show consistent decreases in the prevalence rate of smoking for men in the Jewish population, but little to no change or increases in the prevalence rates of smoking among Arab men (MOH, 2012; MOH, 2015). Smoking rates have decreased among Jewish men from staggering high rates of 45%-47% during the 1980's to 33% in 1994. Between the years 2006 -2010, the prevalence rate of smoking for Jewish men was



approximately 28% (MOH, 2012), but continued to decrease and in 2014, the prevalence rate reached a low of 23.1% (MOH, 2015). Data on smoking rates over time among Arab men is available starting from 1996 where the prevalence rate was a staggering high of 50% (MOH, 2012). Although the prevalence rate among Arab men decreased to 39.8% in 2006, it increased after that period and reached 52.2% in 2010. According to the ministry of health report of smoking in Israel, as of 2014, the smoking prevalence rate among Arab men was 46.6% (MOH, 2015).

In addition to higher smoking prevalence, Arab men smoke more cigarettes per day compared to Jewish men. According to the Ministry of Health data (2015), 25.2% of Arab male smokers smoke more than one cigarette pack per day (i.e., over 20 cigarettes) compared to only 12.2% of Jewish men (MOH, 2015). Despite the implementation of several tobacco control policies in Israel gaps in smoking prevalence between Arab and Jewish men persist.

### **Tobacco Control Policy Environment in Israel**

To reduce smoking-related morbidity and mortality several tobacco control efforts have been implemented in Israel. These include comprehensive smoke-free policy, restrictions on the advertisement of tobacco products, and regulations that impose increased taxation on tobacco products (MOH, 2015).

The “Ordinance on Prevention of Smoking in Public Places and the Exposure to Smoking” – a law that prohibits smoking in public places was approved in Israel in 1983. It aims to facilitate the protection of the public against passive smoking in public spaces, mostly indoor public areas. A recent amendment to the law was approved by the Israeli

Parliament in 2012. It extends the smoke free policy to additional indoor places, such as enclosed workplaces, restaurants and bars, and for the first time, prohibits smoking in open public spaces. For example, with the exception of areas specially designated for smoking, the new regulation prohibits smoking in public shelters; sports and culture centers; synagogues; churches; mosques; government buildings; taxi cabs while passengers are on board; bus shelters and central bus and train stations; vehicles used for driving instruction while driving learners are on board; old age homes and assisted living facilities (MOH, 2015). According to the new regulations, smoking is prohibited in many open spaces except for areas designated as a smoking area. Examples of open space where smoking is banned are: areas 10 meters away from entrances and exits of hospitals and clinics; railway stations including the railway platforms; areas outside a food hall building or a building which serves it such as restaurants, canteens, cafés, clubs, and any other food or drinks-serving facility, public swimming pools including outdoor pools; and more (MOH, 2015). Another policy that aims to reduce exposure to smoking is the “Advertising and Marketing Restrictions of Tobacco Products Ordinance”. This law aims to restrict the advertising of tobacco products and specifically to reduce the exposure of children and teens to such advertisements (MOH, 2015). Israel has also implemented regulations to increase taxes on tobacco products. As part of the National Plan to reduce smoking and its impact of the Ministry of Health, the Finance Committee approved taxation of tobacco products in May 2012 (MOH, 2015). It is estimated that, in 2011, the state income tax on cigarettes reached 5 billion new Israeli shekels (MOH, 2012). According to this policy, the exemption on the import of

alcohol and tobacco products in the duty free was reduced from 2 packets (400 cigarettes) to one packet (200 cigarettes) starting from April 2013 and is now given only to those aged over 18 years old (MOH, 2015). In addition, tax was raised to 130% on tobacco for hookah and is planned to continue increasing up to 500% tax increase within three years of the policy enactment. That is, the price of a pack of hookah tobacco will increase from 10 new shekels per pack to approximately 35 new shekels within three years (MOH, 2015). The tax increase was also imposed on other tobacco products such as cigars.

In 2005, Israel has ratified the World Health Organization's Framework Convention on Tobacco Control (FCTC) (World Health Organization [WHO], 2013) and as part of the National Tobacco Control Plan of the Ministry of Health (2011), the implementation of pictorial health warning labels on cigarette packages is currently being planned (MOH, 2015). Recently, a multidisciplinary committee of experts was established including representative from the HMO's, legal officials, and media experts, to plan the implementation of graphic health warnings on tobacco products (MOH, 2015).

Additional tobacco control efforts include education programs that aim to prevent smoking initiation among youth. The Ministry of Health in cooperation with the Ministry of Education and the Israeli Cancer Society are working together to develop a number of programs and curricula addressed to a wide range of school ages, starting from fifth-grade class to high school (MOH, 2015). Other programs that aim to develop

smoking cessation programs directed at teenagers and youth to help them quit smoking are also being planned (MOH, 2015).

Since 2010, smoking cessation services are offered to smokers by the health services in Israel. Those include smoking cessation workshops and smoking cessation prescription drugs. An increase of 425% in the number of smokers who utilized these services was observed in 2012 compared to 2010 (i.e., 11,844 smoker, 19,646 smokers, and 25,505 smokers have utilized these services in 2010, 2011, and 2012, respectively) (MOH, 2015). A continuing trend continues of smokers utilizing these services in coming years will underscore the importance and necessity of subsidizing smoking cessation services in Israel. In addition, although not included in the basic health insurance basket, a smoking cessation quit line is operated by Maccabi Health Services in Israel (MOH, 2015). It is important to note that as part of the recent efforts of the Ministry of Health to combat smoking in Israel, a professional committee was established to prepare and recommend a national program that is culturally sensitive and tailored to reduce smoking among Arabs in specific (MOH, 2015). The implementation and evaluation of such plan is yet to be seen.

In summary, despite the extensive tobacco control efforts implemented in Israel, little is known about their implementation, enforcement, and effectiveness in the Arab segregated society. Also little is known about Arab smokers' participation and utilization of the available smoking cessation services. Research is needed to understand factors that underlie the tobacco epidemic among Arab men in Israel and to evaluate the

effectiveness of tobacco control programs in this population as a first step to reduce smoking prevalence among Arab men in Israel.

## **2.5 STUDY CONCEPTUAL FRAMEWORK**

### **Stress Process Model**

The proposed study is guided by the stress process model. The model is based on multiple concepts related to the status location of people within society (Pearlin, 2010). At the heart of this model is the concept of stressors, the broad array of conditions and experiences that can exceed and challenge the adaptive capacities of people. Social stressors can either be sudden and disruptive events or more persistent chronic hardships that extend through time (Pearlin, 1989). The model emphasizes the role of status stratification in creating and maintaining social stressors (Pearlin, 1989) and the variety of physical and mental health outcomes that are consequences of exposure to these stressors. Stressors related to status stratification, such as ethnic discrimination, challenge important rights and opportunities in ones' social life and can constitute a threat to important identities, hence can have powerful social and health consequences (Pearlin, Schieman, Fazio, & Meersman, 2005). Smoking and use of other substances are emotion focused coping strategies that serve, in part, to alleviate the negative emotions and cognitions associated with exposure to ethnic discrimination (Bennett et al., 2005; Brondolo et al., 2011; Cuevas et al., 2013; Jackson & Knight, 2006; Landrine & Klonoff, 1996; Martin, Tuch, & Roman, 2003; Pascoe & Smart Richman, 2009; Purnell et al., 2012).

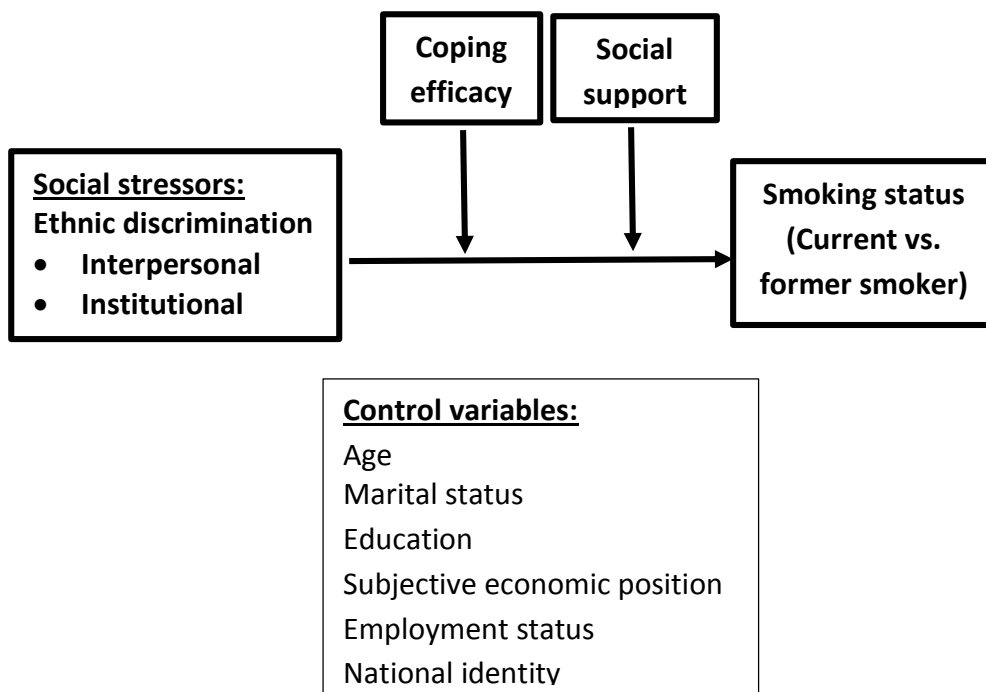
The stress process model also recognizes the role of personal and social resources in explaining why people exposed to similar stressors do not necessarily suffer the same deleterious health consequences (Pearlin, 2010). The model posits that personal resources (e.g., coping style and efficacy, self-esteem, and mastery) and social resources (e.g., social support and social integration) can potentially serve as protective barriers to the negative consequences of social stressors on health (Pascoe & Smart Richman, 2009; Pearlin, 2010). For example, people with material, social, and psychological resources may experience less stress because fewer situations may tax or exceed their resources compared to people without such resources (Lazarus & Folkman, 1984; Lazarus & DeLongis, 1983). Also having resources, such as social support, may enable the person to better cope with stress (Lazarus & Folkman, 1984; Lazarus & DeLongis, 1983; DeLongis, Folkman, & Lazarus, 1988). Findings from studies on the role of social support in the link between ethnic discrimination and health outcomes, other than smoking, are inconsistent. Some studies provide support that social support moderates this relationship (Jasinskaja-Lahti, Liebkind, Jaakkola, & Reuter, 2006; Kim, 2014; Noh & Kaspar, 2003) while others did not (Gee et al., 2006b; Yoo & Lee, 2005). It is plausible though that variation in the availability of social support can influence the way a person copes with stressful experiences such as discrimination and whether the person resorts to any form of tobacco use as a way to mitigate discrimination related stress.

Personal resources, such as coping repertoires, may also help to explicate why some individuals resort to tobacco use as a way to mitigate discrimination stress

whereas others do not. Coping-related characteristics at the individual level, if effective, may buffer the negative effects of discrimination on smoking outcomes. In this study we focus on coping efficacy, defined by Aldwin and Revenson (1987) as people's subjective evaluation of whether or not their coping efforts were successful in meeting their goals within a specific stressful situation. Though coping strategies with discrimination are many (e.g., active vs. passive coping, problem focused vs. emotion focused coping, avoidance, seeking social support, etc.), coping efficacy may act as an intermediate step between the actual coping strategy and tobacco use among Arab men. For example, those with high coping efficacy may experience less stress, hence less likely to smoke to mitigate discrimination related stress.

### **Study Conceptual Model**

The study's conceptual model is presented in Figure 2.2. The model is based on the stress process model. It posits that both experiences of interpersonal ethnic discrimination and perceptions of institutional group discrimination, are social stressors that Arabs in Israel endure because of their status as a non- Jewish ethnic minority. Both forms of discrimination can appear either in the form of disruptive stressful events or as more persistent hardships and problems that can span considerable intervals of time across the life course of Arabs in Israel. Both forms of ethnic discrimination may be associated with smoking-related outcomes among Arab men who are current and former smokers. Coping efficacy as a personal resource and social support as a social resource may moderate the relationship between each form of ethnic discrimination and smoking-related outcomes in this population.



**Figure 2.2**  
Study conceptual model



## 2.6 MEASUREMENT OF ETHNIC DISCRIMINATION

Ethnic discrimination is a social theoretical construct that is often not directly observable. It refers to the process by which a member of a racial or ethnic group is treated differently (especially unfairly) because of his/her membership in that group (Jary & Jary, 1995). Ethnic discrimination can operate on both the interpersonal and institutional level and can be measured using survey questions. Theory suggests that ethnic discrimination is a complex phenomenon that influences behavior through multiple intertwined pathways (Krieger, 1999). Developing measures to assess ethnic discrimination requires knowledge of the specific phenomenon of ethnic discrimination and the theory that underlies its association with other theoretical constructs (DeVellis, 2012). Using poor measures to assess ethnic discrimination can introduce measurement error to the research and can lead to erroneous conclusions about the association of ethnic discrimination to health outcomes (DeVellis, 2012).

### **Adaptation of Existing Measures to Assess Ethnic Discrimination among Arabs in Israel**

Survey questions can be used to assess and quantify the construct of “ethnic discrimination” as a first step to studying its association with health outcomes. Many survey instruments to assess ethnic discrimination exist, however, those were developed mainly in the United States (Bastos et al., 2010; Paradies, 2006) and they primarily assess African Americans’ perceptions of and experiences with racism (Brondolo et al., 2005). Experiences of ethnic discrimination may differ qualitatively from one country to another and from one ethnic group to another (Thrasher et al., 2012). In general, scale developers in the field assume that the role of culture is

substantial and that it is impossible to use standard instruments to assess experiences of ethnic discrimination across cultures (Bastos et al., 2010). Thus, studying ethnic discrimination among Arab men smokers and former smokers in Israel requires attendance to the issue of whether existing measures developed in the United States can validly capture the complexity of ethnic discrimination as it operates within the specific cultural context of Israel. If not, a process of cultural adaptation of existing measures is required or the development of new culturally specific measures might be needed (International Agency for Research on Cancer [IARC], 2008; Landrine & Klonoff, 1996). Moreover, measures developed in the United States are developed in the English language and cannot be used to assess ethnic discrimination in other populations where the native language is different from English. Using existing measures developed in the United States to assess ethnic discrimination among Arabs in Israel requires translation and linguistic adaptation of these measures to the Arabic language.

The majority of existing measures assess interpersonal ethnic discrimination. To a varying degree, those measures attempt to capture multiple dimensions of exposure to interpersonal ethnic discrimination. Those include the frequency of encounters with discrimination across a variety of domains, (e.g., medical care, school, work, public places), the timing of exposure to ethnic discrimination (e.g., recent exposure versus lifetime exposure), the individual's appraisal of ethnic discrimination as a stressful event, and the individual's responses to ethnic discrimination (e.g., hostility, avoidance) (Brondolo et al., 2005; Shariff-Marco et al., 2009). In the current study, we use Krieger's "Experiences of Discrimination" scale (EOD) to assess interpersonal ethnic

discrimination among Arab male smokers and former smokers in Israel. The original measure asks about having ever experienced discrimination in each of nine specified situations (Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005). The responses are measured on a frequency scale “never”, “once”, “2-3 times”, and “4 times or more”. The scale was originally validated and shown to have equivalent psychometric properties across ethnic groups in the U.S (Krieger et al., 2005), however, using it in its original form to assess interpersonal ethnic discrimination among Arab groups in Israel may introduce bias and measurement error. In cross-cultural research, bias can result from inappropriate application of an instrument in the target population (Hambleton et al., 2005). Cultural and language differences between the U.S. and Israel can affect construct and item equivalence as those relate to ethnic discrimination in the two populations.

Construct equivalence pertains to the conceptual meaning of ethnic discrimination as well as to how the construct is operationalized in two distinct cultures (Hambleton et al., 2005). Dissimilarity in the definition of ethnic discrimination across cultures can lead to construct bias or construct non-equivalence (Hambleton et al., 2005). Because the definition of a construct informs subsequent stages of question selection, development, and adaptation, construct in-equivalence can lead to the content of a measure to be highly reflective of how the phenomenon operates in one culture but not the other (IARC, 2008). In the current study, we define ethnic discrimination as differential treatment (especially unfair treatment) of Arabs by Jews because of their ethnic origin. A definition that is similar to Krieger’s conceptualization

of racial discrimination in the U.S. Also, the way ethnic discrimination against Arabs in Israel operates is that Arabs are treated unfairly by people from the majority Jewish population. Ethnic discrimination against an Arab by an Arab, although possible, is unlikely and is not the focus of the current study. Lastly, the word discrimination translates to Arabic as "onsoreye" "عنصريه" that has the same conceptual meaning as in English (i.e., differential treatment mainly unfair treatment because of one's race, ethnicity, religion, or other social trait).

To ensure construct equivalence we modify the original items in the "Experiences of Discrimination" (EOD) measure to reflect situations or settings in which Arabs in Israel might face interpersonal ethnic discrimination. As a first step, the EOD measure was translated to the Arabic language then the question stem and the items were modified to describe experiences of unfair treatment on the basis being an Arab in nine settings and places in which Arabs in Israel may face ethnic discrimination. Table 2.1 presents our adapted items contrasted with their corresponding items from the original EOD measure. We use the same response options used in the original scale (i.e., "never"; "once"; "two to three time"; "4 times or more"). We add a fifth response option of "not applicable" to distinguish persons who have been in each of those settings and did not face discrimination from those who have never been in those settings. Scores will be summed across all items with higher numbers indicating higher occurrence of interpersonal discrimination (Krieger et al., 2005).

Adaptation of existing measure to a target culture or language requires attendance to item equivalence (IARC 2008). Item non-equivalence pertains to problems

in separate items such as poor translations, use of ambiguous wording, or different connotations' of words in different cultures (Hambleton et al., 2005). Thus, literal translation of the EOD items to Arabic may produce a verbatim reproduction of the English version EOD but may not yield an equivalent measure of interpersonal ethnic discrimination. Hence, the adaptation of the EOD items included changes in the items so as to maximize their cultural appropriateness in the target Arab culture in Israel (see Table 2.1 for modified items). For example, in the item "have you been discriminated against at school?", the translation of the word "school" from English to Arabic is "madrassah" "مدرسه" which refers to primary through high school. The vast majority of Arabs in Israel attend primary, middle, and high school in the segregated Arab towns where inter-ethnic interactions are unlikely to occur. Thus, responses of Arab respondents are likely to be affected by the use of the word "school" in the question. Inter-ethnic Arab-Jewish interactions are more likely to occur in institutions of higher education such as colleges and universities located in Jewish or mixed cities in Israel. To ensure item equivalence, we modify this item to reflect the appropriate context in which Arabs may face ethnic discrimination when getting education, that is, college or university (Table 2.1). Lastly, we added questions to assess the timing of the last discriminatory encounter, and questions to assess self-reported stressfulness of these experiences. We use cognitive interviewing techniques to examine Arab respondents' understanding of the modified items in the Arabic language.

**Table 2.1** The original English version “Experiences of Discrimination” scale (EOD) items contrasted with the Adapted EOD items (EOD-A)

Original EOD items (Krieger, et al 2005)		EOD-A items		Reason for item adaptation
<b>Question stem</b>	Have you ever experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your race, ethnicity, or color?		In each of the following situations, please tell me how often, in your lifetime, have you been discriminated against or treated unfairly because of being an Arab?	Question stem was shortened and modified to specify ethnic discrimination on the basis of being an Arab
<b>Items</b>				
1	At school	1	While applying to or studying in college or university	Literal translation of “school” to Arabic is “Madrassa” which refers to primary-high school. Inter-ethnic Arab-Jews interactions are unlikely to occur in primary –high school settings and are likely occur in higher education institutions located in Jewish or mixed cities.
2	Getting hired or getting a job	2	While searching for a job outside your town	The majority of Arabs in Israel reside in segregated Arab towns where inter-ethnic interactions with Jews are not common. Ethnic

3	At work	3	At your work place outside your town	discrimination is more relevant to those Arabs who search for jobs outside of their own towns such as mixed or dominantly Jewish cities. There is no passive tense in Arabic. The phrase getting hired is hard to translate.
4	Getting housing	4	While searching for housing in mixed or Jewish cities	Item specifies work place where inter-ethnic interactions with the majority Jewish population can occur.
5	Getting medical care	5	While getting health care service outside your town	The majority of Arabs in Israel reside in segregated Arab towns where inter-ethnic interactions with Jews are not common. Ethnic discrimination in housing is likely to happen if An Arab searches for housing in mixed or dominantly Jewish cities.
				Health care institutions in the segregated Arab towns are primarily employed by Arab health care professionals. Inter-ethnic interactions with Jewish health care providers are more likely when

				getting health care outside one's own town.
6	Getting service in a store or restaurant	-		The majority of Arabs in Israel reside in segregated Arab towns. Most Arabs are likely to shop or dine in Arabic stores or restaurants. Public institutions in the segregated Arab towns are primarily employed by Arab professionals. Inter-ethnic interactions with public institutions predominantly employed by Jewish professional are more likely when getting such services outside ones' own town. We provide example of public institutions to prevent confusion of other settings such as universities as public institution.
7	Getting credit, bank loans, or a mortgage	6	While getting services from public institutions outside your town (such as the bank and social security)	
8	On the street or in a public setting	7	In the street or in public places outside your town (such as buses, parks, beach, the mall, and the movies)	The item is similar. We specify public place outside one's town where inter-ethnic interaction may occur. Also, we add examples of public places to avoid confusion of other settings such as university, or airport as public places.
9	From the police or in the courts	8	While interacting with the police	



- 9 In the airport

Airports are a setting that is less relevant to ethnic discrimination in the U.S., however, in Israel, the airport is one of the major places where Arabs are routinely ethnically profiled and over questioned and searched because of their ethnicity as Arabs.

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## Measurement of Other Forms of Ethnic Discrimination

Construct underrepresentation can occur when a measure uses items that do not adequately cover the breadth of a construct (i.e., content validity) (Hambleton et al., 2005). Ethnic discrimination can occur at multiple levels, interpersonal and institutional. Depending on the population or ethnic group under study, interpersonal ethnic discrimination might not be the most salient form of discrimination that members of ethnic minority group endure. In Israel, the residential segregation between Arabs and Jews limits inter-ethnic encounters leading to fewer opportunities for interpersonal ethnic discrimination to occur. Thus, assessing interpersonal ethnic discrimination alone might not capture the complexity and breadth of the construct of ethnic discrimination and the role that ethnic discrimination plays in producing ethnic health disparities in Israel. Add to that, in a state like Israel, the sensitivity of the issue of ethnic discrimination against its Arab citizens causes the majority of interpersonal discriminatory incidents to go unreported. Together these two factors can lead to construct underrepresentation of ethnic discrimination against Arabs in Israel.

Other forms of ethnic discrimination such as ethnic institutional discrimination may play a significant role in producing health disparities between Arabs and Jews in Israel. Institutional discrimination is likely to harm the economic and social well-being of the subordinate group by limiting opportunities for income, wealth, education, and employment (Krieger, 1999). Limited economic and social opportunities may in turn, contribute to higher stress levels experienced by members of the subordinate ethnic group. Studying institutional ethnic discrimination per se requires analyses at a higher

level than the individual. Furthermore, comparing different ethnic groups that are subject to different levels of institutional discrimination may be most informative in revealing the extent to which some ethnic groups are affected by institutional discrimination. At the individual level, one's perception of discriminatory policies against his\her entire ethnic group may also evoke stress reactions that can negatively impact health and health behaviors (Brondolo et al., 2005). In the current study, we develop a new measure to assess perceived institutional group discrimination against Arabs as an ethnic in Israel. An extensive literature review on institutional discrimination against Arabs as a group in the Israeli society informed the drafting of 12 items. The items ask for the level of participant's agreement with 12 statements that describe systematic inequalities between Arabs and Jews in Israel in multiple life domains such as education, employment, and infrastructure. Examples of items are "Arabs are generally portrayed in a negative way in the Israeli media"; "Arabs in Israel have less employment opportunities compared to Jews"; "Arab towns are underdeveloped compared to Jewish towns". Responses are measured on a four-point likert scale (1) strongly disagree, (2) disagree, (3) agree, (4) strongly agree.

### **Psychometric properties of measures to assess interpersonal and institutional group discrimination**

When an instrument has been modified in a translation\adaptation process or when a new measure is developed, it is important to demonstrate the psychometric properties of the adapted or new measure in the target population (DeVellis, 2012; Hambleton et al., 2005). Psychometric testing of measures includes examining the factor

structure and dimensionality of multi item measures, as well as their reliability and validity (DeVellis, 2012). Psychometric examination of instruments to assess ethnic discrimination are generally reported by original scale developers in the literature and less often reported by independent researchers (Bastos et al., 2010). This is a limitation of this body of research since psychometric evidence produced by independent researchers is important to support or refute preliminary psychometric data (Bastos et al., 2010).

As discussed earlier, ethnic discrimination is a multifaceted construct that requires multi-item measures to capture the complexity of the phenomenon. Survey items (i.e., indicators) serve as an observable proxy to the unobservable theoretical construct (e.g., ethnic discrimination). Hence, conclusions about the theoretical construct assume that the observable proxies are closely linked to the underlying construct they are intended to represent (DeVellis, 2012). When the two closely correspond, the consequence of referring to the measurement instrument as the construct is inconsequential. When the relationship between the construct and its indicators is weak, confusing the measure with the phenomenon it is intended to measure can lead to erroneous conclusions (DeVellis, 2012). Hence, as part of a psychometric testing, an examination of the relationship between the latent variable and its indicators is important.

In the current study, we examine the psychometric properties of two multi-item instruments to assess ethnic discrimination among Arabs in Israel. Results from

psychometric testing will be used to further refine measurement of ethnic discrimination to maximize its validity and, thereby, its value in future research.

## CHAPTER 3

### RESEARCH METHODS AND DESIGN

#### 3.1 OVERVIEW OF RESEARCH METHODS FOR PAPER 1 AND PAPER 2

##### Study population

Data for this study comes from a cross sectional study of 964 Arab male current and former smokers, citizens of Israel (hereafter the parent study). The study was conducted by Dr. Nihaya Daoud from the University of Ben-Gurion in Israel and was designed to assess factors related to smoking behavior and readiness to quit among Arab male smokers.

##### Eligibility criteria and sampling design

To participate in the study, respondents (n=964) had to be (1) an Arab man citizen of Israel, (2) between 18 and 64 years, and (3) identify as a current or former tobacco user. Exclusion criteria were 1) never smoking (i.e., a person identifying as never smoking in his life); 2) cognitive inability to respond to survey questions (i.e., physical or mental conditions or cognitive dysfunction); and 3) being hospitalized or institutionalized during the study period. The study utilized a multi-stage sampling design in which 20 Arab towns were randomly selected from a list of 64 Arab towns spanning northern, central, and southern Israel. Sampling of Arab towns was proportionate to the to the distribution of Arab towns in each of the three regions

of Israel, their population size, and the socio-economic status of the locality (Daoud et al., in press). A list of all men residing in these 20 towns was obtained from the Israeli population registry and a simple random sample of Arab men was drawn from that list.

### **Data collection procedure**

Data were collected by Arab interviewers who were trained by Dr. Nihaya Daoud, the principal investigator of the parent study. First, men whose names were randomly drawn from the sampling list were contacted via phone or via personal visit to their home by the interviewer and were screened for smoking status. Men were asked whether they currently smoke or have smoked in the past. Those who replied yes were asked whether they would be willing to participate in the study. Men who agreed to participate were interviewed face-to-face in Arabic using a structured questionnaire. The interviews took place at the participants' homes. No incentives were offered to participants. Data collection began in September 2012 and concluded in September 2013. The response rate for participation in the study was 83% (Daoud et al., in press). The study questionnaire included, among other measures, questions to assess smoking status, measures of experiences of interpersonal ethnic discrimination and perceptions of institutional group discrimination, and measures of coping efficacy and social support.

### 3.2 MEASURES FOR PAPER 1 AND PAPER 2

Measures used in paper 1 and paper 2 of this study and their operationalization are detailed below:

***Interpersonal ethnic discrimination.*** We assessed self-reported experiences of interpersonal ethnic discrimination using an adapted Arabic version (EOD-A) of the “Experiences of Discrimination” (EOD) scale (Krieger et al., 2005) (Osman, Daoud, Walsemann, Bell, & Thrasher, unpublished manuscript). The items were adapted to reflect settings where Arabs in Israel are likely to have interethnic interactions with the Jewish majority and hence discrimination may occur. Participants were asked to indicate how often, in their lifetime, had they been discriminated against or treated unfairly because of being an Arab in the following nine settings: while getting health care services, in the street or in public places, while searching for a job, at your work place, while getting services from public institutions, while interacting with the police, while searching for housing in mixed Arab-Jewish or Jewish cities, while applying for or studying in college or university, and while in the airport. Response options were (0) never, (1) once, (2) 2-3 times, and (3) 4 times or more (Cronbach’s alpha .79). Scores were summed across all items (range 0-27) with higher numbers indicating higher self-reported interpersonal ethnic discrimination.

***Perceptions of Institutional Group Discrimination (IGD).*** Participants perceptions of ethnic discrimination against Arabs at the institutional level was assessed using the “Institutional Group Discrimination” (IGD) scale (Osman et al., unpublished manuscript). The measure was developed specifically for this study and had shown good



psychometric properties in this population (Osman et al., unpublished manuscript). The measure included 12 items that asked for the level of participant's agreement with statements that describe systematic inequalities between Arabs and Jews across various life domains (e.g., education, employment, infrastructure, resource allocation and others). For example, "Arabs are generally portrayed in a negative way in the Israeli media", "Arabs in Israel have less employment opportunities compared to Jews", and "Arab towns are underdeveloped compared to Jewish towns". Response options were measured on a four-point likert scale (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree. For this study, items with 10% or more missing data were excluded from the analyses. Thus, the final measure for this study included 8 items (See measure with included and excluded items in appendix A). Scores were summed across all items (range 0-24) with higher numbers indicating greater perceptions of institutional group discrimination against Arabs (Cronbach's alpha .89). Because of low variability in participant responses in our sample (Mean=18.6, SD=4.6, Coefficient of variation <1) we categorized this variable into "low perceived IGD" (score 0-15), "moderate perceived IGD" (score 16-20), and "high perceived IGD" (score 21-24).

**Smoking status.** Smoking status was measured using the following question "Do you smoke?" Response options were 1) "Yes, I smoke" 2) "no, I quit within the past six months" 3) "no, I quit more than 6 months ago" and 4) "no, I quit more than five years ago". Those who replied "yes, I smoke" were coded as "1" current smokers. Participants who choose any of the latter three responses were coded as "0" former smokers.

**Nicotine dependence.** The level of nicotine dependence among current smokers was assessed using the six-item Fagerstrom Test for Nicotine Dependence (FTND) measure (Heatherton, Kozlowski, Frecker, Fagerstrom, 1991). Participants were asked: (1) how soon after you wake up do you smoke your first cigarette? (0=after 60 minutes, 1=31 to 60 minutes, 2=6 to 30 minutes and 3=within 5 minutes), (2) do you find it difficult to refrain from smoking in places where it is forbidden? (1=yes, 0=no), (3) which cigarette would you hate most to give up? (1=the first one in the morning, 0=all others), (4) how many cigarettes per day do you smoke? (0=10 cigarettes or less, 1=11 to 20 cigarettes, 2=21 to 30 cigarettes, and 3=31 cigarettes or more), (5) do you smoke more frequently during the first hours of waking than during the rest of the day? (1=yes, 0=no), and (6) do you smoke if you are ill that you are in bed most of the day? (1=yes, 0=no). Values were summed across items (range 0-10). Higher numbers indicate greater nicotine dependence. The variable was modeled as a continuous dependent variable in all analyses.

**Coping efficacy.** Coping efficacy was measured using two items adapted from Manne & Glassman (2000). Participants were asked to think of a problem that they were dealing with lately and rate how well they think they are dealing (1) with the changes and disruptions in their lives imposed by this problem, and (2) with the emotional stresses imposed on them by the problem. Both items were rated on a 5-point scale (0) not well at all (1) not well (2) sometimes not well and sometimes well (3) well, and (4) extremely well. Previous research that used similar questions to assess the persons' appraisal of their coping strategies support the construct validity of those questions (Aldwin &

Revenson, 1987). The two items were highly correlated ( $r=.85$ ). We calculated the sum score of both items for each participant (range 0-10, Mean=6.5, SD=2.3) with participants who reported not dealing with any problem coded as 0. Then, we created a series of indicator variables for the following categories “0” not dealing with any problem, “1” low coping efficacy (scores 1-6), and “2” high coping efficacy (scores 7-10).

**Social support.** Social support was measured using six items adapted from Karlsson, Sjostrom, and Sullivan (1995). Participants were asked how frequently they received the following types of support: (1) someone gave them information, guidance, or advice during crisis, (2) someone gave them practical help when they need it, (3) someone that they could trust and talk to about themselves and their problems, (4) someone that shows affection and closeness toward them, (5) someone who supports them emotionally in times of crisis, and (6) someone who can provide them with material help (e.g., money). Response options were 0=never, 1=rarely, 2=sometimes, 3=often, and 4=all the time. Responses were summed across items (range 0-24, Mean=16.14, SD=5.8) and then dichotomized using the 50<sup>th</sup> percentile as the cutoff point into “low social support (0-15)” and “high social support (16-24)”.

**Single-item ethnic discrimination measure.** The survey included a separate single item that assessed perceived ethnic discrimination. Participants were asked “In the past year, have you been treated unfairly or discriminated against because you are an Arab?” Response options were on a five point scale: (0) never, (1) rarely, (2) sometimes, (3) many times or all the time (Daoud, 2006).

**Stressful life events.** This construct was measured using questions from the “Recent Life Events Index” (McDonough & Walters, 2001; Turner, Wheaton, & Lloyd, 1995).

Participants were asked to indicate whether each of the following situation has happened to them or to close family members or friends: (1) someone got fired from work, (2) someone had a major financial crisis, (3) someone in family died, (4) someone got sick or injured in an accident, (5) someone experienced a change of job for a worse one, (6) someone began receiving income support or went on welfare, and (7) someone experienced any other difficult life events in the last year?. The measure also asked “During the past four years: (8) did you or someone in your family get injured in events related to the Arab-Israeli conflict (e.g., a terror attack, Nakba day, protests), and (9) did you or someone in your family spend time in prison? (Daoud, Soskolne, & Manor, 2009a, 2009b). Responses to each item were yes/no. Responses were summed across all items to create a count variable of stressful life events (range 0-9).

**Chronic stress.** This construct was assessed using questions from the abbreviated version of Wheaton's (1991) (McDonough & Walters, 2001; Turner et al., 1995) Chronic Stress Inventory. Ten items asked about enduring strains related to financial status, social life, relationships, family health, and job stressors. Participants were asked to indicate whether each of the following events were generally “true” or generally “untrue” for them: (1) too much is expected of you by others, (2) people are too critical of you or what you do, (3) you don't have enough money to buy the things you need, (4) you have problems with your partner or (if you don't have a partner) you find it is very difficult to find someone who is compatible with you, (5) the behavior of one of your

family members is a source of serious concern to you, (6) you have a family member (parent, a child or partner) who is in very bad health, (7) you were under a lot of pressure, demands at your workplace, (8) you tried for, a long time to find a job, without success, (9) you are dealing with the implications of a serious\severe familial situation (such as fighting between families, murder in the name of family honor), and (10) you feel stress because of negative escalations in the conflicts between groups within the Israeli society. Responses for “true” were coded as 1 and “not true” was coded 0. Responses were summed across the ten items to create a count variable (range 0-10) with higher numbers indicating higher levels of chronic stress.

**National identity.** Participants were asked whether they identify themselves as (1) Palestinian, (2) Arab, (3) Arab Palestinian, (4) Israeli, (5) Arab Israeli, or (6) Israeli Palestinian. Responses were collapsed into two categories with the first three categories coded as 1 (i.e., Arab\ Palestinian) and the later three categories coded as 0 (i.e., Israeli) (Daoud, 2007).

**Knowledge of smoking harms.** Participants’ were asked whether they think (1) smoking can harm their ability to do activities that they are used to do day-to-day, (2) smoking can harm organs within the body, and (3) smoking can cause diseases. Response options were coded as 1=yes and 0=no and were summed to create an index of knowledge of smoking harms (range 0-3), with higher numbers indicating greater knowledge.

**Socioeconomic indicators.** Socioeconomic indicators adapted from prior research (Daoud et al., 2009a, 2009b) include education, subjective economic position (SEP), and employment status. Education was a categorical variable that assessed the highest level

of school the participant completed and was categorized into (0) Primary-Middle school, (1) Vocational or regular high school, and (2) Beyond high school (i.e., college or university). SEP was assessed as the participant's ranking of his family's income relative to other families in the Israeli society (i.e., worse or much worse, similar, and better or much better). To assess employment status, participants were asked whether they currently work and were categorized into those employed vs. those unemployed.

**Demographic variables** of age and marital status were queried. Age (range 18-64) was measured in years. Because of the small number of unmarried men, the variable marital status was collapsed into "married" versus "unmarried" with the latter category including single, divorced, widowed, and separated.

### **3.3 DATA ANALYSES FOR PAPER 1**

Our aim in paper 1 was to examine the psychometric properties of the ethnic discrimination measures – the EOD-A scale and the new institutional group discrimination (IGD) measure. We first examined the distribution of responses to individual items on each of the discrimination measures as well as the distribution of all other variables included in the analyses, including the amount and patterns of missing data. We examined differences in socio-demographics and smoking related variables between those who had missing data on some variables (n=261) compared to those who had full data on all variables (n=703). Then, using list wise deletion, our final analytic sample included participants who had no missing data on all variables included in the analyses for paper 1 (n=703). We obtained descriptive statistics to characterize

our analytic sample. All data management and univariate analyses were conducted using Stata v.13.

### **Confirmatory factor analysis (CFA)**

A CFA model links the latent variable to the observed indicators and can inform the researcher about the strength of the relationship between each indicator and the latent variable, the degree of measurement error in each indicator, and whether the indicators behave as hypothesized in relation to the latent variable (Bollen & Noble, 2011). To assess the factor structure of the EOD-A scale measuring interpersonal ethnic discrimination we conducted a confirmatory factor analysis (CFA), using an a priori factor structure from Krieger et al., (2005). Krieger & colleagues (2005) examined the psychometric properties of the original English language EOD scale in sample of African Americans, Latino, and White participants and showed a unidimensional measure with acceptable overall model fit (Krieger et al., 2005).

**Modeling Steps:** We first examined the distribution of responses to the individual items included in the EOD-A as well as the amount and patterns of missing data on the individual indicators and whether the missing data was missing at random. All data management were conducted using Stata version 13.

*Model specification:* we specified a CFA model that tests the relationship between nine indicators and a single latent variable (or factor) of “Interpersonal ethnic discrimination”. The model is represented in the equation  $x = \alpha_x + \Lambda_x \xi + \delta$  Where  $x$  is a vector of observed variables,  $\alpha_x$  is a vector of intercepts,  $\Lambda_x$  is the factor loading matrix that shows the effects of the latent variable on the  $x$ 's.  $\xi$  ( $\xi_i$ ) is a vector of latent

variables and  $\delta$  is a vector of errors. As is standard practice, we assume that the errors have a mean of zero and are uncorrelated with the latent variable. In the model, the coefficient of the first indicator “have been discriminated against in public places” was set to one to provide a scaling metric for the latent variable  $\xi$ .

*Identification:* Identification refers to whether it is possible to “uniquely estimate values of all of the parameters in a structural equation model. When we can, the model is identified. When we cannot, it is underidentified” (Bollen & Noble, 2011) (p. 15641). The CFA model of the EOD-A had factor complexity =1 (i.e., the maximum number of latent variables that influences each indicator equals 1) and included more than 3 indicators that loaded on that factor. Also, the scaling rule was met by scaling the latent variable ( $\xi$ ) to one of the indicators ( $x_1$ ). Hence, the model meets the criteria for sufficient and necessary “Identification Rules” (Bollen & Noble, 2011) and appears identified.

*Estimation:* All indicators (range 0-4) were specified as ordinal variables and the model was estimated using Weighted Least Square estimation (WLSMV) for categorical outcomes in Mplus.

*Model fit assessment:* The fit of the CFA model was evaluated by examining multiple indicators of overall model fit including the Comparative Fit Index (CFI), the Tucker-Lewis (TLI), and the Mean Square Error of Approximation (RMSEA).

*Data interpretation and presentation:* We present standardized factor loadings and their associated standard errors and p values. A factor loading represents the change in each indicator for a one unit change in the latent variable. Greater factor loadings represent a stronger relationship between the indicator and the latent variable. A p value less than



0.05 represents a statistically significant association between the indicator and the latent variable. The fit of the CFA model was evaluated by examining multiple indicators of overall model fit. Those include the CFI and TLI for which values closer to 1 indicate good model fit (i.e., an acceptable cutoff point is 0.95), and the RMSEA for which values  $\leq 0.05$  indicates close approximate fit (good), between 0.05 - 0.08 suggest reasonable error approximation, and  $\geq 0.10$  suggests poor fit (Kline, 2011).

### **Split sample exploratory factor analysis (EFA)**

Our measure of perceptions of “Institutional Group Discrimination” (IGD) is a new measure and we do not have an a priori hypothesis for its factor structure. Hence, we used exploratory factor analysis (EFA) to explore the dimensionality (i.e., number of latent constructs or factors) of this measure. We first examined the distribution and response patterns for the individual items. Invalid responses of “don’t know” were set to missing. All data management were conducted using Stata version 13.

We performed a split sample exploratory factor analysis (EFA) (DeVellis, 2012). This approach allows the replicability of results and is recommended because it provides evidence as to whether the factor structure obtained within a particular data set is likely not based on chance and is likely to be observed within another similar data set (Osborne & Fitzpatrick, 2012). First, we randomly selected half of our analytic sample (n=351) and performed a first EFA. Then, we conducted a second EFA using data from the other half of the sample (n=352). In both EFAs, all items were specified as ordinal and Weighted Least Square (WLSMV) estimator and the oblique (GEOMIN) rotation method were used. In each EFA, we examined the model fit statistics, the eigenvalues

and the scree plots. Then, we examined the factor loadings looking for a solution that meets the criteria of a simple structure in which at least 3 items have high loadings on each factor and low cross loadings on multiple factors (DeVellis, 2012). Rigorous threshold for replicability of factor structure across the split samples involves the same number of factors being extracted, the same items assigned to the same factors, and the same range of magnitude of factor loadings obtained in both samples (Osborne & Fitzpatrick, 2012). The fit of both the CFA and EFAs were evaluated by examining multiple model fit indices including the CFI, TLI, and RMSEA.

*Data interpretation and presentation:* We determined how many meaningful factors underlie the data using five criteria: model fit statistics, the eigenvalues, the scree plots, factor loadings, and interpretability of factor loadings. The fit of each EFA model was evaluated by examining the CFI and TLI for which values closer to 1 indicated good model fit (i.e., an acceptable cutoff point is 0.95), and the RMSEA (values  $\leq 0.05$  indicates close approximate fit (good), between 0.05 - 0.08 suggest reasonable error approximation, and  $\geq 0.10$  suggests poor fit). An eigenvalue represents the amount of variance that is captured by a given factor (DeVellis, 2012; O'Rourke, Hatcher, & Stepanski, 2005). We considered factors with an eigenvalue greater than one as potentially meaningful. We also examined the scree plots to confirm the number of factors conveyed by the eigenvalues. Then, we examine the factor loadings for each item and their associated standard errors and p values. The cutoff for significant loading that was used is 0.4 and the cutoff for cross loading is 0.2. In addition, Results from

these EFA models are presented in a table that include the factor loadings and their associated standard errors and p values as well as model fit statistics.

### **Reliability and construct validity assessments**

We assessed the reliability of each measure separately by examining their internal consistency reliability (Cronbach's alpha) and range of inter-item correlations. Prior research by Krieger et al., (2005) reported good internal consistency reliability of the 9 item EOD English measure (Cronbach's alpha ranged from .74 - .86) and positive correlations of .14 - .53 between the EOD items (Krieger et al, 2005). In this study, the reliability of the EOD-A was examined using the full analytic sample (n=703). The reliability of the IGD measure was examined for each split sample separately. Desired Cronbach's alpha was between .7 and .9.

To assess the measures construct validity, the items of each ethnic discrimination measure were summed (EOD-A, range 0-27 and IGD, range 0-24) with higher numbers indicating higher ethnic discrimination. Then, we examined the association of each measure with other constructs with which discrimination should be associated or unassociated based on results from previous research. For example, past research reveals that experiences of interpersonal ethnic discrimination have been positively associated with (a) smoking status (Guthrie et al., 2002; Landrine & Klonoff, 1999; Purnell et al., 2012) and (b) stress (Purnell et al., 2012). Ethnic minority members who report strong ethnic identity are more likely to endorse institutional discrimination against their ethnic group (Barry & Grilo, 2003). Also, persons with higher educational attainment might report more institutional group discrimination because they are more

exposed to situations in which they are discriminated against, or they may be more aware of subtle forms of discrimination on both the individual and institutional levels (Borrell et al., 2007). Consistent with this literature, to assess the measures convergent validity, unadjusted linear regression models were estimated in which each ethnic discrimination sum score was regressed on other constructs including (a) a single item measure of ethnic discrimination, (b) smoking status, (c) measures of stress (stressful life events and chronic stress), and (d) national identity, and (e) educational attainment. Assessment of the discriminant validity of the measures included examining the association between each measure of ethnic discrimination and knowledge of smoking harms. We choose this construct to establish the discriminant validity of both ethnic discrimination measures for two reasons (1) its availability in the data set and (2) there is no theoretical basis that supports knowledge of smoking harms to be associated with experiencing interpersonal ethnic discrimination or with perceived institutional discrimination (although we can find no evidence that the relationship has ever been assessed). All reliability and validity assessments were conducted using Mplus 7.

### **Sensitivity analyses**

Mplus estimation methods assume data is missing at random (Kline, 2011). We handled missing data using listwise deletion, however, full information estimation (FIML) that uses all available information from participants is also available in Mplus. As sensitivity analysis, all CFA, split sample EFAs, and reliability and validity tests were estimated again using full information estimation.

### 3.4 DATA ANALYSES FOR PAPER 2

Our aim in paper 2 was to examine the association between each form of ethnic discrimination, self-reported experiences of interpersonal discrimination or perceived institutional group discrimination, and smoking status and nicotine dependence and whether coping efficacy and social support moderate these relationships.

#### **Data management and univariate analyses**

We began with data management that included recoding of invalid responses and computation of derived variables. All categorical variables were indicator coded. We proceeded with obtaining descriptive statistics and an examination of the patterns of missing data. Univariate analysis included an examination of the distribution of each variable. For categorical variables, we examined and report frequencies for each category. For continuous variables, we examined and report the mean, standard deviation, and range. All data cleaning and management were conducted using Stata, version 13.

#### **Analytic samples**

For this study we employed data from two analytic samples. The first was the full sample of current and former smokers and was used to examine the association between each form of ethnic discrimination and smoking status. The second is a subsample of current smokers only and was used to estimate the association between each form of ethnic discrimination and nicotine dependence.

Full sample of current and former smokers: An examination of the missing data using the full sample of smokers and former smokers revealed that a total of 100 participants

had missing values on some of the variables, primarily on the individual items of institutional group discrimination (IGD) measure. Using Chi square and ttest, we examine differences in characteristics between those with missing data and those without missing data and found no statistically significant differences on any of the variables included in our analyses, except for employment status. Participants with missing data were more likely to be unemployed than those without missing data. Missing values on all predictor variables used in our analysis (i.e., interpersonal and institutional group discrimination, coping efficacy, social support, education, and subjective economic position) were multiply imputed using *mi impute* in Stata version 13.

A total of 5 imputed data sets were created using chained equations. Nominal variables of marital status, employment, and national identity for which there were small numbers of missing data, as well as the outcome variables (smoking status and nicotine dependence) were not imputed. Our final analytic sample of current and former smokers included 939 observations (n=777 current smokers, n=162 former smokers).

Subsample of current smokers: The second sample we employed in this study was a subsample of current smokers only (n=705) and was used to estimate the relationship between each form of ethnic discrimination and nicotine dependence. The discrepancy in the sample size of current smokers in the full sample vs. the subsample of current smokers is attributed to missing on the outcome variable of nicotine dependence (n=72 with missing data) which were not imputed. Those excluded because of missing data on

nicotine dependence (n=72) were younger (Mean age =32) than those included in the analytic subsample (n=705) (Mean age=37), were more educated, and a higher percentage of them endorsed high IGD against Arabs. No other statistically significant differences were observed between those excluded and those included in the analytic subsample of current smokers.

### **Statistical analyses**

Separate regression models were estimated for interpersonal discrimination and for institutional group discrimination (IGD) as the main explanatory variables in this study. When predicting smoking status as the outcome of interest we estimated logistic regression models. When predicting nicotine dependence as the outcome of interest we used OLS regression. Coping efficacy and social support were conceptualized as moderators of the relationship between each form of ethnic discrimination and smoking status or nicotine dependence. Our model building process went as follow. First, we examined the association between each form of discrimination (interpersonal or institutional) and smoking status or nicotine dependence adjusting for socio-demographic variables (Model 1). Then, we examined a main effect model of the association between interpersonal or institutional group discrimination, coping efficacy, and social support and smoking status or nicotine dependence adjusting for socio-demographic variables (Model 2). In Model 3, we included an interaction term between ethnic discrimination (interpersonal or institutional) and coping efficacy (EOD-A\*low coping efficacy, EOD-A\*not dealing with any problem, or moderate IGD\*low coping efficacy, moderate IGD\* not dealing with any problem, high IGD\*low coping efficacy,

high IGD\*not dealing with any problem). Lastly, in model 4, we included an interaction term between ethnic discrimination (interpersonal or institutional) and social support (EOD-A\*high social support, or moderate IGD\*high social support, high IGD\*high social support). We plotted statistically significant interactions using estimates from the fully adjusted interaction models (Model 3 for interactions with coping efficacy and Model 4 for interactions with social support). All models adjusted for age, marital status, education, subjective economic position (SEP), employment status, and national identity and were conducted using Stata v. 13.

### Equations

Logistic regression models of the association between each form of ethnic discrimination and smoking status are represented with the following equations:

Model 1

$$\text{Logit (P=1=current smoker)} = b_0 + b_1 (\text{interpersonal or institutional discrimination}) + b_2 (\text{age}) + b_3 (\text{marital status}) + b_4 (\text{education}) + b_7 (\text{SEP}) + b_5 (\text{employment}) + b_5 (\text{national identity}) + e$$

Model 2: Main effect logistic model

$$\text{Logit (P=1=current smoker)} = b_0 + b_1 (\text{interpersonal or institutional discrimination}) + b_2 (\text{coping efficacy}) + b_3 (\text{social support}) + b_4 (\text{age}) + b_5 (\text{marital status}) + b_6 (\text{education}) + b_7 (\text{SEP}) + b_8 (\text{employment}) + b_9 (\text{national identity}) + e$$

Model 3: Interaction model between interpersonal or institutional group discrimination and coping efficacy



Logit (P=1=current smoker) =  $b_0 + b_1$  (interpersonal or institutional discrimination) +  $b_2$  (coping efficacy) +  $b_3$  (social support) +  $b_4$  (age) +  $b_5$  (marital status) +  $b_6$  (education) +  $b_7$  (SEP) +  $b_8$  (employment) +  $b_9$  (national identity) +  $b_{10}$  (interpersonal or institutional discrimination\*coping efficacy) + e

Model 4: Interaction model between interpersonal or institutional group discrimination and social support

Logit (P=1=current smoker) =  $b_0 + b_1$  (interpersonal or institutional discrimination) +  $b_2$  (coping efficacy) +  $b_3$  (social support) +  $b_4$  (age) +  $b_5$  (marital status) +  $b_6$  (education) +  $b_7$  (SEP) +  $b_8$  (employment) +  $b_9$  (national identity) +  $b_{10}$  (interpersonal or institutional discrimination\*social support) + e

Where smoking status is a binomial variable (1=current smoker, 0= former smoker) and P is the probability of being a current smoker. The b's are the regression coefficients.

The e's represent residuals of model equations, which may contain measurement error in addition to all other influences on the dependent variable over and above those captured by a linear combination of the predictors.

Linear OLS regression models of the association between each form of ethnic discrimination and nicotine dependence are represented with the following equations:

Model 1

Nicotine dependence =  $b_0 + b_1$  (interpersonal or institutional discrimination) +  $b_2$  (age) +  $b_3$  (marital status) +  $b_4$  (education) +  $b_5$  (SEP) +  $b_6$  (employment) +  $b_7$  (national identity) + e

Model 2: Main effect model

Nicotine dependence =  $b_0 + b_1$  (interpersonal or institutional discrimination) +  $b_2$  (coping efficacy) +  $b_3$  (social support) +  $b_4$  (age) +  $b_5$  (marital status) +  $b_6$  (education) +  $b_7$  (SEP) +  $b_8$  (employment) +  $b_9$  (national identity) + e

Model 3: Interaction model between interpersonal or institutional group discrimination and coping efficacy

Nicotine dependence =  $b_0 + b_1$  (interpersonal or institutional discrimination) +  $b_2$  (coping efficacy) +  $b_3$  (social support) +  $b_4$  (age) +  $b_5$  (marital status) +  $b_6$  (education) +  $b_7$  (SEP) +  $b_8$  (employment) +  $b_9$  (national identity) +  $b_{10}$  (interpersonal or institutional discrimination\*coping efficacy) + e

Model 4: Interaction model between interpersonal or institutional group discrimination and social support

Nicotine dependence =  $b_0 + b_1$  (interpersonal or institutional discrimination) +  $b_2$  (coping efficacy) +  $b_3$  (social support) +  $b_4$  (age) +  $b_5$  (marital status) +  $b_6$  (education) +  $b_7$  (SEP) +  $b_8$  (employment) +  $b_9$  (national identity) +  $b_{10}$  (interpersonal or institutional discrimination\*social support) + e

Where nicotine dependence is a continuous outcome variable. The b's are the regression coefficients. The e's represent residuals of model equations, which may contain measurement error in addition to all other influences on the dependent variable over and above those captured by a linear combination of the predictors.

## Assumptions of OLS regression

Assumptions of OLS regression were checked for each final model with the continuous outcome of nicotine dependence. Those included:

1. Normality of residuals: We examined the normal probability plots of the errors produced in Stata after estimating each of the final interaction models and the Shapiro Wilk test of normality. The normal probability plots show very slight deviation from normality. The Shapiro Wilk test for each model was statistically significant ( $p < 0.05$ ) indicating that we can reject the null hypothesis that the residuals are normally distributed.
2. Linearity: to examine this assumption we plotted the standardized residuals against each of the predictor variables in the each of the final OLS regression models that we estimated. Over all the plots show a random scatter of points rather than a clear nonlinear patterns.
3. Homoscedasticity: the assumption of the homogeneity of variance of the residuals was tested by plotting the residuals against the predicted values from each final model. The patterns observed in the plots support heteroscedasticity of residuals.
4. The variables are measured without error. This assumption cannot be checked and we assume it is violated and mention that in the limitations of the study.
5. No unmeasured confounding in the relationship between the variables in the model: we adjusted for potential confounders available in the data such as age, marital status, education, income, employment, and national identity, however,

other unmeasured confounding in the relationship between the variables might exist. We mention this as a potential limitation of the study.

6. Independence of errors: this assumption is likely met because the data comes from a multistage random sample of Arab men.

**Other issues:** We screened the data for outliers and multicollinearity.

**Outliers:** we examined the studentized residuals (ranged between -2.2 and 2.3) for each model and didn't find evidence for influential outliers.

**Multicollinearity:** indicates a problem of a nearly perfect linear dependency among the independent variables involved in the model and can lead to unstable regression estimates. Multicollinearity was tested by examining the correlations between the predictor variables in each model. Most correlation were lower than .30 and the highest correlation observed was .66 between age and marital status. We also examined the variance inflation factor (VIF) after each final OLS regression model. VIF values ranged between 1.09 and 2.20 indicating no evidence for multicollinearity.

#### **Issues with variability in continuous explanatory variables**

We examined whether we have enough variability in participants responses to the ethnic discrimination items, coping efficacy and social support as the main explanatory variables in our models. We examined the distribution of responses and summary statistics of each composite measure including the range, mean, median, standard deviation and the Coefficient of Variation (CV). The CV of each variable was calculated as the ratio of the standard deviation to the mean. The CV for a single variable aims to describe the dispersion of the variable in a way that does not depend

on the variable's measurement unit. The higher the CV, the greater the dispersion in the variable. We considered distributions with a CV less than 1 to be low-variance, whereas those with a CV higher than 1 were considered to be high variance. Variables with low variability were categorized or dichotomized and were used as indicator variables in all analyses.

**Interpretation and presentation of results:** For logistic regression models, we interpreted the odds ratio of being a current smoker vs. a former smoker. We report odds ratios and their associated confidence intervals in tables. We used regression coefficients (b's or log odds) from each final interaction model (Model 3 or Model 4) to plot statistically significant interactions in excel. For OLS regression models we interpreted b's (i.e., regression coefficients) and also used those to plot statistically significant interactions from Model 3 or Model 4 in excel. In both types of models (logistic or OLS) if the interaction was not statistically significant then we interpreted results from the main affect model.

### **Power calculations**

For each interaction model we calculated the required sample size using G Power software. Given a small effect size (Cohen's  $F = 0.02$ ), significance level 0.05, power of 0.80, and a maximum of 17 predictor variables included in each interaction model (i.e., interpersonal or institutional discrimination, coping efficacy, social support, age, marital status, education, SEP, employment, national identity, and an interaction term between interpersonal discrimination or institutional group discrimination and coping efficacy or social support) the required sample size was 311. Since our sample is

larger (n=939 for the full sample of current and former smokers and n=705 for the analytic subsample of current smokers) we infer that we have adequate power to detect the hypothesized effects.

## CHAPTER 4

### RESULTS

#### 4.1 PAPER 1: PSYCHOMETRIC PROPERTIES OF MEASURES TO ASSESS ETHNIC

##### DISCRIMINATION: A STUDY OF ARAB MALE CURRENT AND FORMER SMOKERS IN ISRAEL<sup>1</sup>

###### ABSTRACT

We evaluated the psychometric properties of two instruments used to assess ethnic discrimination among Arabs in Israel. The “Experiences of Discrimination” (EOD) scale was adapted to assess interpersonal ethnic discrimination (EOD-A) and a new measure was developed to assess perception of institutional group discrimination (IGD) against Arabs. Data were analyzed from a cross-sectional study of Arab male current and former smokers (n=703), aged 18-64. A confirmatory factor analysis (CFA) model was estimated to assess the factor structure of the EOD-A. A split sample exploratory factor analysis (EFA) approach was used to assess the factor structure of the IGD measure. Cronbach’s alpha was calculated to assess reliability. In unadjusted linear regression models, ethnic discrimination was regressed on other constructs to assess construct validity. CFA of the EOD-A produced a model with a single underlying factor

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<sup>1</sup> Amira Osman, Nihaya Daoud, Katrina M. Walsemann, Bethany A. Bell, & James F. Thrasher. To be submitted to *Social Science & Medicine*.

and acceptable fit to the data (CFI = 0.967; TLI = 0.956). Standardized factor loadings ranged from 0.65 – 0.77 and were all statistically significant at  $p < .001$ . Results from split sample EFA of the IGD measure support a one factor solution with good model fit (CFI = 0.986; TLI = 0.980) and factor loadings  $\geq 0.68$  that were statistically significant at  $p < .05$ . The results were similar across the split samples. Both measures had good internal consistency reliability (i.e.,  $\alpha = .90$  and  $.93$ , for the EOD-A and the IGD measure, respectively). Construct validity for both measures was supported by positive associations with a single-item measure of ethnic discrimination, indicators of stress, and smoking status. We conclude that the EOD-A and the new IGD measure have good psychometric properties, which make them useful for assessing ethnic discrimination among Arab male current and former smokers in Israel.

**Keywords** ethnic discrimination, institutional group discrimination psychometric properties, Palestinian Arabs, Israel

## Introduction

Ethnic discrimination refers to the process by which members of a socially defined group are treated differently (especially unfairly) because of their membership in that group (Jary & Jary, 1995). Discrimination on the basis of race or ethnic origin, hereafter referred to as “ethnic discrimination,” can result in social and economic ethnic disparities that position ethnic minorities in a disadvantaged position (Krieger, 1999). Discrimination on the basis of ethnicity or race also acts as a social stressor and has been linked to a range of poor mental and physical health outcomes, including risk behaviors such as smoking (Chae et al., 2008; Purnell et al., 2012), increased



psychological distress and depression (Brown et al., 2000; Paradies, 2006; Williams & Mohammed, 2009), high blood pressure, low birth weight (Clark, 2003; Collins et al., 2000; Collins, David, Handler, Wall, & Andes, 2004; Fang & Myers, 2001; Gyll, Matthews, & Bromberger, 2001; Krieger & Sidney, 1996; Mustillo et al., 2004), and increased risk for mortality (LaVeist, Sellers, & Neighbors, 2001).

In Israel, citizens of the Arab minority are subject to ethnic discrimination that may contribute to their lower socioeconomic position compared to the majority Jewish population (Abu-saad, 2004; Adalah, 2011; Golan-Agnon, 2006; Molavi, 2009). Arabs also present higher rates of morbidity and mortality compared to their Jewish counterparts (Central Bureau of Statistics [CBS], 2009). While ethnic discrimination is undoubtedly associated with negative social and health outcomes, no valid instruments exist to evaluate its effects in the Arab population. Hence, its role as a determinant of social wellbeing and health among Arabs in Israel has rarely been addressed empirically. Valid measurement of ethnic discrimination among Arabs in Israel is a critical first step to studying its causes and effects. In this study, we evaluate the psychometric properties of two instruments to assess experiences and perceptions of ethnic discrimination among Arabs in Israel, so that future research can investigate the consequences of ethnic discrimination on social and health outcomes in this population.

## **Background**

Palestinian-Arabs constitute 20.7% of the Israeli population (Central Bureau of Statistics, 2013). They have lower socioeconomic status compared to the Jewish majority and face multifaceted ethnic discrimination on the basis of their national

belonging (i.e., a person's sense of belonging to one state or to one nation regardless of his\her citizenship status), and ethnic and religious affiliation as non-Jews (Adalah, 2011; Molavi, 2009; Pappé, 2011). Indeed, evidence for discrimination against Arab citizens in Israel is well documented (Abu-saad, 2004; Adalah, 2010, 2011; Bar-On, 1994; Coalition against Racism in Israel, 2012, 2013; Golan-Agnon, 2006; Molavi, 2009; Rouhana & Sultany, 2003; Rouhana, 2006; The Arab Association for Human Rights, 2006; The Israel Democracy Institute, 2011, 2012).

In spite of the discrimination that Arabs face in Israel, few studies have examined Arabs' experiences with and perceptions of ethnic discrimination and the effects of discrimination on their social wellbeing and health. For example, Daoud and colleagues (2012) found that about 40% of Arabs reported facing discrimination sometimes, frequently or often in the past year because of their ethnicity as Arabs (Daoud, Shankardass, O'Campo, Anderson, & Agbaria, 2012). Another study by Baron-Epel, Kaplan, & Moran, (2010a) used the original 7-item EOD scale (Krieger et al., 2005) translated into Arabic, Hebrew, and Russian in a sample of Arabs, Israeli Jews, and immigrant Jews from the former Soviet Union, and found a similar percentage of Arabs (about 40%) reporting discrimination. In this study, reports of ethnic discrimination among Arabs were highest in the areas of employment and education, and in public places and public institutions (about 20%) and lowest in settings of obtaining housing and using the healthcare system (about 7%) (Baron Epel et al., 2010). These studies underscore the need for more research to investigate ethnic discrimination as a potentially significant social determinant of social and health outcomes among Arabs;

however, the psychometric properties of the measures used in these studies have never been reported.

Measures to assess ethnic discrimination have been developed primarily in the United States, specifically to study African Americans' experiences with racism (Bastos, Celeste, Faerstein, & Barros, 2010; Brondolo et al., 2005; Utsey, 1998). The most commonly used measures are the "Experiences of Discrimination" (EOD) scale (Krieger et al., 2005), "The Everyday Discrimination" scale (Williams, Yu, Jackson, & Anderson, 1997), and the "Major Experiences of Discrimination" scale (Williams et al., 2008). These measure show good psychometric properties and construct validity in studies on various ethnic groups in the U.S (Clark, Coleman, & Novak, 2004; Bastos et al., 2010; Krieger et al., 2005). Experiences of ethnic discrimination, however, may differ qualitatively from one country to another and from one ethnic group to another (Thrasher, Clay, Ford, & Stewart, 2012). Hence, existing measures developed in the United States may not adequately capture experiences of ethnic discrimination in other societies (Borsa, Damásio, & Bandeira, 2012; Hambleton, Merenda, & Spielberger, 2005) and need to be adapted to reflect differing contexts.

Another shortcoming of existing measures of ethnic discrimination is their primary focus on assessing interpersonal ethnic discrimination. Interpersonal ethnic discrimination refers to discriminatory actions perpetrated by individuals towards individuals of another race or ethnic group (Krieger, 1999). Ethnic discrimination, however, operates on multiple levels, including at the interpersonal and institutional levels (Krieger, 1999). Depending on the population or ethnic group under study,

interpersonal discrimination might not be the most salient form of discrimination that members of a minority group endure. In Israel, for example, assessing interpersonal ethnic discrimination against Arabs alone may not fully capture the range of ethnic discrimination that Arabs experience.

Ethnic institutional discrimination refers to discriminatory policies or practices carried out by institutions (Krieger, 1999). Ethnic Institutional discrimination is likely to harm the economic and social well-being of the subordinate group by limiting opportunities for income, wealth, education, and employment (Krieger, 1999). Limited economic and social opportunities may, in turn, contribute to higher stress levels experienced by members of the ethnic group. Furthermore, one's perception of discriminatory policies against his\her entire ethnic group may also increase stress levels and negatively impact health (Brondolo et al., 2005). While institutional discrimination against Arabs in Israel is pervasive (Abu-saad, 2004; Adalah, 2011; Adalah, 2012; Golan-Agnon, 2006; Molavi, 2009; Rouhana & Sultany, 2003; Rouhana, 2006), Arabs' perceptions of this form of ethnic discrimination has never been assessed or empirically studied. In fact, this form of ethnic discrimination has rarely been studied elsewhere and when studied, a single question was used (e.g., People from my ethnic group are discriminated against) (Barry & Grilo, 2003). Our study aims to advance research in this area by introducing and evaluating a new measure to assess perceptions of ethnic institutional discrimination against Arabs as an ethnic group.

## The current study

In the current study, we aimed to evaluate two instruments to assess exposure to ethnic discrimination among Arabs in Israel. The first is an adapted version (EOD-A) of the “Experiences of Discrimination” (EOD) scale (Krieger et al., 2005); it assesses exposure to interpersonal ethnic discrimination. The second is a new scale that was developed by the authors and assesses perceptions of institutional group discrimination (IGD) against Arabs as an ethnic group in Israel. We examined the psychometric properties of each instrument including each measure’s factor structure, reliability, and construct validity. Assessment of the measures’ convergent validity included examining associations between each measure (interpersonal or perceived institutional group discrimination) and constructs previously shown to be associated with ethnic discrimination such as (a) other measures of ethnic discrimination (Krieger et al., 2005), (b) smoking status (Guthrie, Young, Williams, Boyd, & Kintner, 2002; Landrine & Klonoff, 1999; Purnell et al., 2012), and (c) measures of stress (Purnell et al., 2012). We hypothesize that experiences of interpersonal discrimination and perceptions of institutional group discrimination will be positively and significantly associated with one another as well as with other measures of ethnic discrimination, smoking status and stress. Further, ethnic minority members who report strong ethnic identity are more likely to endorse discrimination against the self and against their ethnic group (Barry & Grilo, 2003). Persons with higher educational attainment may also report more interpersonal and institutional discrimination because they are more exposed to situations in which they are discriminated against, or they may be more aware of subtle

forms of discrimination on both the individual and institutional levels (Borrell et al., 2007). Therefore, constructs of national identity and educational attainment were used to test the convergent validity of the measures. Lastly, we assessed the measures' discriminant validity by examining their association with knowledge of smoking harms, a construct with which discrimination should be only weakly correlated or uncorrelated.

## **Methods**

### **Sample**

Study participants were drawn from a cross-sectional study of 964 Arab male current and past smokers, aged 18-64. The study was designed to assess factors related to smoking behavior and readiness to quit among Arab male smokers (Daoud et al., in press). The study utilized a multi-stage probability sampling design in which 20 Arab towns were randomly selected from a list of 64 Arab towns spanning northern, central, and southern Israel. Sampling of Arab towns was proportionate to the distribution of Arab towns in each of the three regions (i.e., 58% of the 64 Arab towns in the sampling frame are located in northern Israel, 30% in central Israel, and 12% in southern Israel). The sampling strategy also took into account the size and socioeconomic ranking of the locality (Find more information on sampling strategy in Daoud et al., in press). Lists of all men residing in these 20 towns were obtained from the Israeli population registry, and a simple random sample of Arab men was drawn from that list. Data were collected between September 2012 and September 2013. First, men whose names were randomly drawn from the sampling list were contacted via phone or via personal visit to their home by the interviewer and were screened for smoking status. Men were asked

whether they currently smoke or have smoked in the past. Those who replied yes were asked whether they would be willing to participate in the study. Men who agreed to participate were interviewed face-to-face by Arab interviewers using a structured questionnaire. The interviews took place at the participants' homes. The response rate was 83%.

## **Measures**

### **Measures of ethnic discrimination**

***Interpersonal ethnic discrimination.*** We assessed interpersonal ethnic discrimination using an adapted version (EOD-A) of Krieger's "Experiences of Discrimination" (EOD) scale (Krieger et al., 2005). As a first step, the 9 item EOD measure was translated to Arabic. Then, the question stem was adapted to ask about experiences of unfair treatment on the basis of being an Arab. Participants were asked "In each of the following situations, please tell me how often, in your lifetime, you have been discriminated against or treated unfairly because of being an Arab." We used 8 of the original 9 item scale but adapted them to reflect settings in which interethnic interactions between Arabs and Jews are likely to occur and , hence in which Arabs in Israel may face interpersonal ethnic discrimination (see full measure detailed in Table 4.2). For example, the items "have you been discriminated against at school?" and "have you been discriminated against while getting housing?" were adapted to ask "have you been discriminated against while applying to or studying in college or university" and "while searching for housing in mixed Arab-Jewish or Jewish cities?". The item "getting service in a store or restaurant" was eliminated because Arabs are most

likely to get this service in the segregated Arab towns in which over 90% of Arabs live. Finally, we added a new item “have you been discriminated against in the airport”, a setting in which Arabs are routinely profiled because of their ethnicity as Arabs (The Arab Association for Human Rights, 2006). We used the same response options from the original EOD scale (i.e., (0) never, (1) once, (2) two to three times, and (3) four times or more) (Krieger et al., 2005).

***Perceptions of institutional group discrimination against Arabs.*** We constructed a measure to assess Arabs’ perception of institutional discrimination against them as an ethnic minority group in Israel. An extensive literature review on institutional policies and practices that discriminate against Arabs in the Israeli society informed the drafting of 12 items (Abu-saad, 2004; Adalah, 2010, 2011; Bar-On, 1994; CAR, 2012, 2013; Golan-Agnon, 2006; Molavi, 2009; Rouhana & Sultany, 2003; Rouhana, 2006; Semyonov & Lewin-Epstein, 2011; The Arab Association for Human Rights, 2006; The Israel Democracy Institute, 2011, 2012). The instrument asked for the level of participant’s agreement with 12 statements that describe systematic inequalities between Arabs and Jews in Israel across various life domains (e.g., education, employment, infrastructure, and language). For example, “Arabs are generally portrayed in a negative way in the Israeli media”, “Arabs in Israel have less employment opportunities compared to Jews”, and “Arab towns are underdeveloped compared to Jewish towns”. Response options were measured on a four-point likert scale (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree (see full measure in in appendix A).



### **Measures used to assess the construct validity of the ethnic discrimination measures**

**Single-item ethnic discrimination measure.** The survey included a separate single item that assessed perceived ethnic discrimination. Participants were asked “In the past year, have you been treated unfairly or discriminated against because you are an Arab?” Response options were on a five point scale: (0) never, (1) rarely, (2) sometimes, (3) many times or all the time (Daoud, 2006).

**Smoking status.** Participants were asked whether they currently smoke and were categorized into (0) current smokers and (1) ex-smokers - those who reported they had quit within the past six months or prior to that.

**Stressful life events.** This construct was measured using questions from the “Recent Life Events Index” (McDonough & Walters, 2001; Turner, Wheaton, & Lloyd, 1995).

Participants were asked to indicate whether each of the following situations had happened to them or to close family members or friends: (1) someone got fired from work, (2) someone had a major financial crisis, (3) someone in their family died, (4) someone got sick or injured in an accident, (5) someone experienced a change of job for a worse one, (6) someone began receiving income support or went on welfare, and (7) someone experienced any other difficult life events in the last year?. The measure also asked “During the past four years: (8) did you or someone in your family get injured in events related to the Arab-Israeli conflict (e.g., a terror attack, Nakba day, protests), and (9) did you or someone in your family spend time in prison? (Daoud, Soskolne, & Manor, 2009a, 2009b). Responses to each item were yes/no. Responses were summed across all items to create a count variable of stressful life events (range 0-9).

**Chronic stress.** This construct was assessed using questions from the abbreviated version of Wheaton's (1991) Chronic Stress Inventory (McDonough & Walters, 2001; Turner et al., 1995). Ten items asked about enduring strains related to financial status, social life, relationships, family health, and job stressors. Participants were asked to indicate whether each of the following events were generally “true” or generally “untrue” for them: (1) too much is expected of you by others, (2) people are too critical of you or what you do, (3) you don't have enough money to buy the things you need, (4) you have problems with your partner or (if you don't have a partner) you find it is very difficult to find someone who is compatible with you, (5) the behavior of one of your family members is a source of serious concern to you, (6) you have a family member (parent, a child or partner) who is in very bad health, (7) you were under a lot of pressure, demands at your workplace, (8) you tried for, a long time to find a job, without success, (9) you are dealing with the implications of a serious\severe familial situation (such as fighting between families, murder in the name of family honor), and (10) you feel stress because of negative escalations in the conflicts between groups within the Israeli society. Responses for “true” were coded as 1 and “not true” was coded 0. Responses were summed across the ten items to create a count variable (range 0-10) with higher numbers indicating higher levels of chronic stress.

**National identity.** Participants were asked whether they identify as (1) Palestinian, (2) Arab, (3) Arab Palestinian, (4) Israeli, (5) Arab Israeli, or (6) Israeli Palestinian. Responses were collapsed into two categories with the first three categories coded as 1 (i.e., Arab\ Palestinian) and the later three categories coded as 0 (i.e., Israeli) (Daoud, 2007).

**Educational attainment.** Education was assessed as a categorical variable that asked about the highest level of school the participant completed and was categorized into (0) Primary-Middle school, (1) Vocational or regular high school, and (2) Beyond high school (i.e., college or university).

**Knowledge of smoking harms.** Participants' were asked whether they think (1) smoking can harm their ability to do activities that they are used to do day-to-day, (2) smoking can harm organs within the body, and (3) smoking can cause diseases. Response options were coded as 1=yes and 0=no and were summed to create an index of knowledge of smoking harms (range 0-3), with higher numbers indicating greater knowledge.

### **Statistical analysis**

We first examined the distribution of responses to individual items on each of the discrimination measures and the distribution of all other variables included in the analyses, including the amount and patterns of missing data. We examined differences in socio-demographics and smoking-related variables between those who had missing data on some variables (n=261) compared to those who had full data on all variables (n=703). Then, using list wise deletion, our final analytic sample included participants who had no missing data on all variables included in the analyses (n=703). We obtained descriptive statistics to characterize our analytic sample. All data management and univariate analyses were conducted using Stata v.13.

To assess the factor structure of the EOD-A scale measuring interpersonal ethnic discrimination we conducted a confirmatory factor analysis (CFA), using an a priori factor structure from Krieger et al., (2005). Krieger & colleagues (2005) examined the

psychometric properties of the original English language EOD scale in a sample of African American, Latino, and White participants and showed a unidimensional measure with acceptable overall model fit. We specified all EOD-A items as ordinal variables and estimated the model using Weighted Least Square estimation (WLSMV). The item “have been discriminated against in public places” was used as the scaling indicator.

To assess the factor structure of the ethnic institutional group discrimination measure we performed a split sample exploratory factor analysis (EFA) (DeVellis, 2012). This approach allows the replicability of results and is recommended because it provides evidence as to whether the factor structure obtained within a particular data set is likely not based on chance and is likely to be observed within another similar data set (Osborne & Fitzpatrick, 2012). First, we randomly selected half of our analytic sample (n=351) and performed a first EFA. Then, we conducted a second EFA using data from the other half of the sample (n=352). In both EFAs, all items were specified as ordinal and Weighted Least Square (WLSMV) estimator and the oblique rotation method were used. In each EFA, we examined the model fit statistics, the eigenvalues and the scree plots. Then, we examined the factor loadings looking for a solution that meets the criteria of a simple structure in which at least 3 items have high loadings on each factor and low cross loadings on multiple factors (DeVellis, 2012). Rigorous threshold for replicability of factor structure across the split samples involves the same number of factors being extracted, the same items assigned to the same factors, and the same range of magnitude of factor loadings obtained in both samples (Osborne & Fitzpatrick, 2012). The fit of both the CFA and EFAs were evaluated by examining multiple model fit

indices including the *Comparative Fit Index* (CFI) and the Tucker-Lewis Index (TLI) for which cutoff point is 0.95 indicates acceptable fit, and the Mean Square Error of Approximation (RMSEA) for which values  $\leq 0.05$  indicates close approximate fit (good), between 0.05 - 0.08 suggest reasonable error approximation, and  $\geq 0.10$  suggests poor fit (Kline, 2011).

We assessed the reliability of each measure separately by examining their internal consistency reliability (Cronbach's alpha). The reliability of the EOD-A was examined using the full sample (n=703). The reliability of the IGD was examined for each split sample separately. Lastly, we assess each measure's construct validity. Construct validity refers to the ability of a measurement tool to actually measure the psychological concept being studied. Subtypes of construct validity are 1) convergent validity, and 2) discriminant validity. To assess both subtypes of construct validity, the items of each ethnic discrimination measure were summed (EOD-A, range 0-27 and IGD, range 0-24) with higher numbers indicating higher ethnic discrimination. Then, unadjusted linear regression models were estimated in which each ethnic discrimination sum score was regressed on other constructs with which discrimination should be associated (convergent validity), including (a) a single item measure of ethnic discrimination, (b) smoking status, (c) measures of stress (stressful life events and chronic stress), and (d) national identity, and (e) educational attainment. Assessment of the discriminant validity of the measures included examining the association between each measure and knowledge of smoking harms, a construct with which discrimination should be only

weakly correlated or uncorrelated. All analyses including CFA, EFAs, and reliability and validity assessments were conducted using Mplus 7.

## **Results**

### **Sample characteristics**

Table 4.1 presents the characteristics of the analytic sample. The average age of participants was 38 (SD = 13, range 18-64). The majority of men were married (67%) and had high school education or less (80%). Forty percent reported their subjective economic position was worse in relation to that of other families in the Israeli society. Forty four percent of men identified as an Arab, a Palestinian, or an Arab Palestinian.

### **Data screening**

The distribution of the EOD-A items and the IGD items are presented in Table 4.2 and Table 4.3, respectively. For any individual item of the EOD-A, only 0.5%-1.2% of participants gave incomplete responses. An examination of the pattern of missing data across all variables indicated that the majority of missing data comes from incomplete (i.e., don't know) responses on multiple individual items of the IGD measure. For any individual item, between 3%-18% of participants gave incomplete responses. Missingness on the IGD items was associated with lower education, lower SEP, unemployment, and Israeli ethnic identity. For the current analysis, items with missing data that exceeded 10% (four items) were excluded to maximize sample size. Hence our final IGD measure comprised 8 items (See complete measure with included and excluded items in appendix A).

Missing data analysis of all final variables supports a mechanism of missing at random (MAR). About 73% (n=703) of the sample had no missing data on any item or variable used in the analysis, 15% had missing data on one variable only, and 12% had missing on two variables or more.

### **Confirmatory factor analysis (CFA) of the EOD-A**

Results from confirmatory factor analysis model of the EOD-A are presented in Table 4.4. All items were positively and significantly correlated, with inter-item correlations ranging from .30-.67. The CFA produced a model with good fit to the data for a single underlying factor (RMSEA = 0.054; CFI = 0.967; TLI = 0.956). Standardized factor loadings ranged from 0.65-0.77 and were all statistically significant at  $p < .001$ . Between 42%-59% of the variability in each of the items was explained by the latent variable.

### **Split sample exploratory factor analysis (EFA) of the IGD measure**

Results from split sample exploratory factor analyses (EFAs) are presented in Table 4.5. The eigenvalues and the scree plot test from the first and second EFAs supported one factor to underlie the data (i.e., Eigenvalues  $> 5.0$  and  $< 1.0$  for factor 1 and 2, respectively) (see Scree plots, Figure 4.1). Except for the RMSEA which was 0.159 in the first split sample EFA, all other model fit indicators of both split sample EFAs indicate acceptable model fit (CFI = 0.953; TLI = 0.934 for the first split sample, and RMSEA = 0.081; CFI = 0.986; TLI = 0.980, for the second split sample). Factor loadings ranged from 0.69 to 0.87 and from 0.68 to 0.88 in the first and second split sample, respectively, and were all significant at  $p < .05$ . Overall, results from EFAs across the split

samples show one factor being extracted and the same range of magnitude of factor loadings obtained.

### **Reliability**

Suggesting good internal consistency reliability, Cronbach's alpha was .90 for the EOD-A (Table 4.4) and .93 for the IGD measure in both split samples (Table 4.5).

### **Validity assessment**

Results from unadjusted linear regression models between the EOD-A and the IGD measure and other constructs are presented in Table 4.6.

**Convergent validity.** As hypothesized, greater interpersonal ethnic discrimination measured using the EOD-A scale was positively associated with greater perceptions of institutional group discrimination (IGD), greater exposure to ethnic discrimination as measured by a single-item measure, and with smoking status. Current smokers had higher EOD-A scores ( $b=1.10$ ,  $SE=0.23$ ,  $p<.001$ ). Greater interpersonal ethnic discrimination was also associated with greater stressful life events ( $b=0.53$ ,  $SE=0.12$ ,  $p<.001$ ) and chronic stress ( $b=0.44$ ,  $SE=0.08$ ,  $p<.001$ ). Interpersonal ethnic discrimination was negatively associated with national identity ( $b=-0.75$ ,  $SE=0.25$ ,  $p<.01$ ). Those who identified as Israelis had lower EOD-A scores than those who identified as Arabs or Palestinians. Contrary to our hypothesis, interpersonal ethnic discrimination was unassociated with educational attainment. Similar associations with the aforementioned constructs were observed for institutional group discrimination (IGD) (Table 4.6), except, IGD was unassociated with chronic stress.



**Discriminant validity.** As hypothesized, neither EOD-A nor IGD were associated with knowledge of smoking harms (Table 4.6).

### **Sensitivity analyses**

Mplus estimation methods assume data is missing at random (Kline, 2011). We handled missing data using listwise deletion, however, full information estimation (FIML) that uses all available information from participants is also available in Mplus. As sensitivity analyses, all CFA, split sample EFAs, and reliability and validity tests were estimated again using full information estimation in Mplus. Results from CFA of the EOD-A (n=962) show a good fitting model (RMSEA = .051; CFI .968; TLI .958). Standardized factor loadings were similar in magnitude and significance to those produced with the restricted analytic sample (range 0.65-0.78). Results from split sample EFAs (n=475 and n=473, for split sample 1 and 2, respectively) also produced a one factor solution similar to that produced with the restricted analytic sample. Model fit (RMSEA 0.143, CFI 0.956, and TLI 0.939 for split sample 1, and RMSEA 0.079, CFI 0.988, and TLI 0.983 for split sample 2). Factor loadings in both EFAs ranged from 0.71-0.88 and were all significant at  $p < .05$ . Cronbach's alpha results were also similar to those obtained with the analytic sample (i.e., 0.90 for the EOD-A and 0.92 for the IGD measure in each split sample). Lastly, associations of the EOD-A as well as the IGD with the single item measure of ethnic discrimination, smoking status, stress variables, national identity, education, and knowledge of smoking harms were similar to those produced with the analytic sample. In sum, results from sensitivity analysis using full information

estimation supports the results we obtained with the restricted analytic sample and would not have changed our conclusions.

## **Discussion**

The results from this study suggest that the “Experiences of Discrimination” scale as adapted for Arabs in Israel (EOD-A) is a valid and reliable self-report measure of interpersonal ethnic discrimination among Arab male current and former smokers. Confirmatory factor analysis supported prior research suggesting that the EOD-A is unidimensional and has good internal consistency reliability. Furthermore, the EOD-A was significantly associated with other measures of ethnic discrimination (i.e., the IGD and a single-item measure of interpersonal discrimination) and with smoking status and measures of stress, all of which support good convergent validity. Future research should confirm the psychometric properties of this adapted measure using more representative samples of Arabs in Israel that include women and nonsmokers. Our newly developed measure of institutional group discrimination (IGD) is intended to assess perceptions of institutional discrimination against Arabs as an ethnic group. The results suggest that this measure is unidimensional and has good psychometric properties. The measure had high internal consistency reliability (Alpha .93) and was positively associated with the EOD-A, a single item measure of exposure to ethnic discrimination, smoking status and stressful life events. These positive associations support the construct\convergent validity of this new measure. Our study underscores that this form of ethnic discrimination may be an important area for future research and intervention. In the context of Israel, residential segregation between Arabs and Jews

limits inter-ethnic encounters, leading to fewer opportunities for interpersonal ethnic discrimination to occur. Hence, interpersonal ethnic discrimination alone may not fully capture the range of ethnic discrimination that Arabs experience. Policies and practices at the institutional level that discriminate against members of the Arab minority in Israel are pervasive and well documented (Abu-saad, 2004; Adalah, 2010, 2011, 2012; Bar-On, 1994; Golan-Agnon, 2006; Pappé, 2011; Rouhana & Sultany, 2003; The Arab Association for Human Rights, 2006); however, no study to date has assessed Arabs' perceptions of or experiences with this form of ethnic discrimination. This measure can be used in future research to document and understand the magnitude, correlates, and effects of perceptions of institutional group discrimination among Arabs.

Even though the measure of institutional group discrimination (IGD) exhibited good psychometric properties in this sample, there were some issues with missing data. For each item, between 3%-18% of men in the sample gave "don't know" responses. Missing on the IGD measure was associated with lower socioeconomic status. Four items, in particular, had large amount of missing data (i.e., more than 10%) and were excluded from the current analysis to maximize sample size. Those items were "The Palestinian history is underrepresented in the educational curriculum taught in Arab schools"; "Arab students are greatly underrepresented colleges and universities in Israel compared to Jewish students"; "In Israel, the Arabic language is perceived as inferior to the Hebrew language"; "Arabs are treated in a discriminatory way by the security personnel in the airport". Missing data analysis showed that less educated participants, those unemployed and those who identified as Israelis were more likely to not respond

to these items. It's important to note that sensitivity analyses of split sample EFA of the full IGD as well as reliability and construct validity tests showed that the full IGD measure that included those items had similar good psychometric properties to those we report in the paper. Qualitative cognitive interviewing techniques can be employed in future research to examine clarity and comprehensibility of the IGD items among low SES Arabs.

Another issue that researchers should attend to when using multi-item measures is the variability in participants' responses. This issue is important mainly when statistical analyses are used to ascertain hypotheses on relationships of IGD with other social and health constructs. In our sample, the vast majority of men endorsed high ethnic institutional group discrimination against Arabs as a group. This finding underscores the need to study this form of ethnic discrimination against Arabs. We attribute the low variability in responses to the IGD items to the restricted sample of male current and former smokers who reside primarily in segregated Arab towns. More representative samples of Arabs that include women, non-smokers, and Arab residents of mixed Arab-Jewish cities may produce more heterogeneous responses. Researchers are advised to be mindful about the variability in participants' responses, its causes and effects, when drawing their conclusions.

Israel is a multiethnic society, in which other ethnic groups than Arabs also face ethnic discrimination. For example, Sephardi, Ethiopian, and immigrant Russian Jews tend to be more economically and politically disadvantaged compared to Ashkenazi Jews, at least in part, because of institutional discrimination. Studying perceptions of

institutional group discrimination across multiple ethnic groups is likely to boost variability in responses to the IGD measure and may be more informative than within ethnic group assessment. The IGD measure in its current form, however, is specific to institutional discrimination against Arabs and needs to be adapted to reflect institutional discrimination perpetrated against other ethnic groups in Israel.

### **Limitations**

We used data from a study of Arab male current and former smokers; hence, our sample was limited in terms of its representativeness of the general Arab population in Israel. Future research is needed to replicate our results in more representative samples of Arabs in Israel that include women and nonsmokers.

Both measures of ethnic discrimination that we used in this study were self-reported measures and hence are subject to limitations related to recall difficulties, social desirability, and fear and willingness to disclose information on discrimination. The use of Arab interviewers to collect data in the participants' homes likely minimized social desirability bias and decreased participants' anxieties about discussing discrimination experiences (Davis, 1997; Davis & Silver, 2003) but it is unlikely to eliminate those biases entirely. Lastly, tests of associations between the two forms of ethnic discrimination (interpersonal and institutional) and other constructs (i.e., stress variables, smoking status, national identity, education, and knowledge of smoking harms) were intended only to estimate the construct validity of the measures and not detailed analysis of these associations. Hence, speculation on the reasons for the crude associations reported here is beyond the scope of this study. Future research should

systematically investigate the relationship between ethnic discrimination and other health outcomes taking into account necessary confounders and other covariates.

### **Conclusions**

Utilizing valid measures to assess experiences and perception of ethnic discrimination among Arabs in Israel is critical for studying how ethnic discrimination influences social and health outcomes in this population. Our study is the first to evaluate the psychometric properties of self-reported measures of ethnic discrimination among Arabs in Israel. It is also the first to develop and test a measure to assess perception of institutional discrimination against Arabs as a group. This study underscores the need to assess multiple forms of ethnic discrimination using valid multi-item measures. By testing the validity of two measures of ethnic discrimination (i.e., interpersonal and institutional) and establishing their psychometric properties, our study opens possibilities for future research on ethnic discrimination that is critical to addressing social and health ethnic inequalities.

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## 4.2 PAPER 2: ETHNIC DISCRIMINATION AND SMOKING-RELATED OUTCOMES AMONG CURRENT AND FORMER ARAB MALE SMOKERS IN ISRAEL: THE MODERATING EFFECTS OF COPING EFFICACY AND SOCIAL SUPPORT<sup>2</sup>

### ABSTRACT

We examined the association between two forms of ethnic discrimination (interpersonal and institutional) and smoking outcomes among Arab men in Israel, and whether social support and coping efficacy moderate these associations. Data come from a cross-sectional study of Arab men aged 18 to 64 who were current or former smokers (n=939). Logistic and linear regression models were estimated to assess the association between each form of ethnic discrimination and smoking status and nicotine dependence, respectively. Interpersonal ethnic discrimination was associated with a greater likelihood of being a current versus former smoker. Among current smokers, both forms of discrimination were associated with higher nicotine dependence. This association was stronger among those with low social support. Coping efficacy did not moderate the association between ethnic discrimination and smoking status or nicotine dependence. Ethnic discrimination, a social stressor, should be considered in efforts to improve smoking outcomes among Arab male smokers in Israel.

**Keywords** ethnic discrimination, Palestinian Arabs, Israel, smoking, social support, coping efficacy

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## Introduction

The stress process model posits that discrimination on the basis of ethnic origin is a social stressor, a condition or an experience that can exceed and challenge the adaptive capacities of people (Pearlin, 1989; Pearlin, 2010). Ethnic discrimination in turn is associated with greater odds of engaging in unhealthy behaviors as a way to cope with discrimination-related stress. In support of this relationship, a number of studies have found that greater exposure to discrimination is associated with greater likelihood of being a smoker as compared with being a non-smoker (Bennett, Wolin, Robinson, Fowler, Edwards, 2005; Chae et al., 2008; Lorenzo-Blanco & Cortina, 2013; Paradies, 2006; Purnell et al., 2012). Furthermore, a few studies have found that discrimination is associated with decreased likelihood of successful cessation and higher nicotine dependence (Kendzor et al., 2014a; Kendzor et al., 2014b). Research on ethnic discrimination and smoking, however, is concentrated in western countries, particularly in the United States, and may be limited in its generalizability to other non-western societies. Further, the vast majority of studies on discrimination, smoking, and other health outcomes focus on personal perceptions of and experiences with ethnic discrimination, neglecting potential effects of other forms of discrimination, such as systematic institutional discrimination leveled against one's entire ethnic group. We address these limitations by applying the stress process model to the Israeli context, and by recognizing the importance of studying perceptions and experiences of multiple forms of ethnic discrimination and their effects on smoking-related outcomes.

Aside from the direct effects of discrimination-related stress described above, the stress process model also posits that the effects of ethnic discrimination on health outcomes may depend on personal and social resources such as coping characteristics and the availability of social support. More specifically, personal and social resources may buffer the negative effects of discrimination on health outcomes, and in our case, on smoking-related outcomes. Though the stress process model is widely used as an overarching framework that guides the study of discrimination and health, specific ideas of this model, such as the buffering effects of personal and social resources, have been empirically tested in only a few studies on discrimination (Chao, 2011; Gee et al., 2006b; Gerrard et al., 2012; Mossakowski & Zhang, 2014) and none of these studies has looked at smoking-related outcomes. Applying the stress process model to ethnic discrimination and smoking-related outcomes, we use data from a national study of Arab men in Israel who are current and former smokers to examine whether coping efficacy and social support buffer the effects of interpersonal and perceived institutional group discrimination on smoking status and nicotine dependence.

## **Background**

### *Arabs in Israel: a historical context*

Status stratification within society, such as being a member of an ethnic minority, is central to stress processes that confer higher risk for negative health outcomes and unhealthy behaviors (Pearlin, 1989; Pearlin, Schieman, Fazio, & Meersman, 2005). For Arab citizens of Israel, their status as an indigenous, non-Jewish ethnic group in Israel may play a pivotal role in their exposure to social stressors. Arabs

in Israel are part of the Palestinian population and were primary owners of the land in Historic Palestine until 1947. In 1948, however, military operations executed by the Jews resulted in dozens of massacres of Palestinian, confiscation of land and properties belonging privately and collectively to Palestinians, and left more than 85% of the entire Palestinian population displaced and scattered (BADIL - Resource Center for Palestinian Residency & Refugee Rights, 2009; Manna', 2013; Pappe, 2006). Those who were internally displaced but remained within the boundaries of what later became the state of Israel – approximately 156,000 Palestinians in 1948 – became an ethnic minority within the Jewish state and were granted Israeli citizenship in the years that followed. Today, Arab citizens of Israel comprise about 20% of the Israeli population. Despite improvements in their economic and health status since obtaining citizenship status, Arab citizens of Israel are still significantly more economically disadvantaged and exhibit poorer health outcomes than their Jewish counterparts (Abu-saad; 2004; Adalah, 2011; Osman & Walsemann, 2013; Semyonov & Lewin-Epstein, 2011).

#### *Discrimination against Arabs in Israel*

Central to the stress process framework is the concept of social stressors (Pearlin, 1989; Pearlin, 2010). An important psychosocial stressor is ethnic discrimination, the unfair and mostly negative treatment of people because of their ethnic origin (Krieger, 2001). Arabs' status as a non-Jewish ethnic minority in a Jewish dominated state places them in an inferior political, social, and economic position and at increased risk of exposure to ethnic discrimination. Indeed, Arab citizens of Israel are subject to both interpersonal and institutional forms of ethnic discrimination (Abu-saad,

2004; Golan-Agnon, 2006; Lewin, Stier, & Caspi-Dror, 2006; Molavi, 2009; Semyonov & Lewin-Epstein, 2011). Interpersonal ethnic discrimination refers to “directly perceived discriminatory interactions between individuals whether in their institutional roles or as public and private individuals” (Krieger, 1999, p. 301). Events of interpersonal ethnic discrimination against Arab citizens in Israel are increasing (Coalition against Racism in Israel [CAR], 2013) and include, but are not limited to, racist derogatory statements by individuals and or public figures, refusal of services (e.g., refusal to rent an apartment to an Arab, refusal to employ an Arab), and unfair treatment by security forces (CAR, 2013). About 40% of Arabs report experiencing interpersonal ethnic discrimination (Baron Epel et al., 2010a; Daoud, Shankardass, O’Campo, Anderson, & Agbaria, 2012), especially around employment, education, and in public places and public institutions (Baron Epel et al., 2010a). Moreover, opinions of Jewish citizens indicate increasing intolerance towards Arabs, with about a third of Jewish Israelis not considering Arabs to be Israeli citizens (The Israel Democracy Institute, 2011). Arabs also face discrimination at the institutional level. For example, many laws and policies restrict Arabs’ citizenship rights and employment opportunities, and actively promote the channeling of resources to Jewish citizens and the exclusion of Arabs from political power (Abu-saad, 2004; Adalah, 2011; Golan-Agnon, 2006; Pappé, 2011; Rouhana & Sultany, 2003).

In addition to traditional overt forms of discrimination, Arabs in Israel also deal with the consequences of the continuing Israeli-Palestinian conflict. They are burdened with related stereotypes such as being disloyal to the state of Israel, which exacerbates intolerance and discrimination against them (Smootha, 2004). Increasing stereotypes,



voices of intolerance towards Arabs, and discrimination, all create a sense that Arabs' status in the Israeli society is inferior and subordinate. Messages of disloyalty, subordination, and exclusion, in turn, contribute to creating an internalized stigma (Major & O'Brien, 2005), lower sense of control, and higher levels of stress, all of which may influence the overall social and psychological well-being of Arabs in Israel.

### *Discrimination and smoking*

The association between social stress and smoking behavior has long been established in studies conducted mostly in the North America and the UK (Bennett et al., 2005; Chae et al., 2008; Graham, Inskip, Francis, & Harman, 2006; Graham, 2009; Harris et al., 2006; Lorenzo-Blanco & Cortina, 2013). Indeed, the negative effects of ethnic discrimination as a social stressor on smoking behavior appear universal and robust across ethnic groups in Western countries (Bennett et al., 2005; Borrell et al., 2010; Chae et al., 2008; Guthrie, Young, Williams, Boyd, & Kintner, 2002; Landrine & Klonoff, 1999; Purnell et al., 2012). Those who experience discrimination are more likely to smoke than those who do not face discrimination. Two U.S based studies also showed everyday interpersonal discrimination is associated with lower likelihood of successful cessation and higher nicotine dependence among smokers (Kendzor et al., 2014a; Kendzor et al., 2014b). We examine the link between ethnic discrimination and the likelihood of being a current smoker versus a former smoker and to nicotine dependence among Arab men in Israel.

The Israeli context provides a unique setting in which to study the association between ethnic discrimination and smoking outcomes. First, Israel is a multiethnic

society with Arabs representing the only indigenous non-Jewish ethnic minority. Second, Arabs citizens of Israel are subject to multiple forms of ethnic discrimination, at the personal and at the institutional level, that contribute to Arab's socioeconomic disadvantage compared with Jews (Adalah, 2011). Third, significant improvements in the health status of Arabs in Israel, as seen in indicators such as infant mortality (Amitai et al., 2005) and life expectancy (Chernichovsky, & Anson, 2005; Na'amnih, Muhsen, Tarabeia, Saabneh, & Green, 2010), have been observed since Arabs became Israeli citizens. Also, compared to other Arab countries, Arabs in Israel have better health indicators. Within the context of Israel, however, Arabs still exhibit poorer mental and physical health outcomes compared to their Jewish counterparts. For example, despite the implementation of several tobacco control policies in Israel, smoking prevalence is twice as high among Arab men compared to Jewish men. For example, in 2014, smoking prevalence was 46.6% among Arab men compared to 23.1% among Jewish men (Ministry of Health [MOH], 2015). Trends in smoking rates in Israel show consistent decreases in the prevalence rate of smoking for Jewish men since the 1980s, but flat or increasing smoking prevalence among Arab men (Central Bureau of Statistics, 2008; Baron-Epel, Keinan-Boker, Weinstein, & Shohat, 2010b; MOH, 2012; MOH, 2015). Arab men also smoke at higher intensity than Jewish men. For example, 25% of Arab male smokers smoke more than one cigarette pack per day compared to 12% of Jewish male smokers (MOH, 2015). Additionally, Arabs exhibit higher morbidity and mortality rates from tobacco-related diseases, such as heart disease and lung cancer, than Jews (Tarabeia et al., 2008; MOH, 2010).

Few studies in Israel have examined the effect ethnic discrimination on health status of Arabs. Those that have provide evidence of negative effects. Daoud and colleagues (2012) examined the association of the forced displacement that Arabs endured in 1948 to their self-rated health and found that internally displaced persons (IDPs) and their descendants had significantly lower self-rated health, reported more feelings of ethnic discrimination and higher levels of chronic stress compared to those who were not internally displaced (Daoud et al., 2012). Another study examined the association between housing demolition, a discriminatory institutional practice carried out by the state, and mental health among Arab Bedouin women and found that women who lived in a house under threat of demolition had significantly higher depressive symptoms than women who did not (Daoud & Jabareen, 2014).

Studies that link discrimination to negative health outcomes and smoking behavior have focused primarily on interpersonal experiences with discrimination. Institutional group discrimination, however, is another source of social stress related to one's ethnic location in society. In Israel, institutional discrimination against Arabs is pervasive (Abu-saad, 2004; Adalah, 2010, 2011; Bar-On, 1994; Golan-Agnon, 2006; Rouhana & Sultany, 2003; Lewin et al., 2006; Molavi, 2009; Semyonov & Lewin-Epstein, 2011). Whether overt or covert, institutional discrimination is likely to harm the economic, social, and psychological well-being of Arabs in Israel by limiting opportunities for employment, income, and education (Okun & Friedlander, 2005) and increasing levels of stress, all of which have implications for Arab men's smoking outcomes.

Research on perceptions of group discrimination and health outcomes is rare. In fact, most studies on perceptions of group discrimination discuss the idea of personal\group discrimination discrepancy, a phenomenon in which people perceive higher levels of discrimination directed at their ethnic group than personal discrimination directed at themselves as individual members of that group (Taylor, Wright, Moghaddam, & Lalonde, 1990). This phenomenon has been observed in some studies among ethnic minorities in the United States and Canada and when assessing racial\ethnic and gender discrimination (Crosby 1984; Guimond & Dube-Simard, 1983; Kessler, Mummendey, & Leisse, 2000; Taylor et al., 1990). This discrepancy may be explained by denial or minimization of personal discrimination versus an exaggeration of group discrimination and other cognitive and emotional biases related to information processing (e.g., recall biases and discomfort in confronting one's own victimization) (Crosby, 1984). In Israel, extreme residential segregation between Arabs and Jews (Falah, 1996; Lewin-Epstein & Semyonov, 1992) may also lead to personal/ group discrimination discrepancy. Residential segregation leads to less interethnic interactions and hence lower chances for interpersonal ethnic discrimination to occur. Residential segregation, however, can exacerbate Arabs' sense of exclusion from Israeli society as a group and their sense of economic deprivation compared to Jews. Nevertheless, discrimination at the personal level as well as perceptions of group discrimination, both reflect the extent to which Arabs feel integrated in the fabric of the Israeli society and may have unique influences on Arabs men' smoking outcomes.

*The role of coping efficacy and social support in buffering discrimination effects*

The stress process framework posits that the effects of ethnic discrimination on health outcomes may depend on personal and social resources such as coping characteristics with stress and the availability of social support. In Israel, over 90% of Arabs live in homogenous segregated Arab towns and tend to live in close proximity with their extended family (Central Bureau of Statistics [CBS], 2011). Also, Arabs tend to have large nuclear families, which have the potential to confer high levels of social support (Pines & Zaidman, 2003; Daoud, 2009a). Consistent with the stress process framework, high levels of social support may buffer the effects of discrimination on smoking outcomes in this population. Benefits of social support that help buffer the need to smoke in the face of discrimination may include providing a sense of security, belonging, and connectedness, helping the individual understand that discrimination is a shared experience, guiding the individual to use effective methods for responding to or coping with discrimination, and distracting individuals from stressors by encouraging participation in social activities (Brondolo, ver Halen, Pencille, Beatty, & Contrada, 2009).

Personal resources, such as coping repertoires, may also help to explicate why some individuals resort to tobacco use as a way to mitigate discrimination stress whereas others do not. Coping-related characteristics at the individual level, if effective, may buffer the negative effects of discrimination on smoking outcomes. In this study we focus on coping efficacy, defined by Aldwin and Revenson (1987) as people's subjective evaluation of whether or not their coping efforts were successful in meeting their goals within a specific stressful situation. Though there are many coping strategies for dealing

with discrimination (e.g., active vs. passive coping, problem focused vs. emotion focused coping, avoidance, seeking social support, etc.), coping efficacy may act as an intermediate step between the actual coping strategy and tobacco use among Arab men. For example, those with high coping efficacy may experience less stress or be less affected by stress, hence less likely to smoke to mitigate discrimination related stress.

The stress-buffering effect of coping, however, may not be universal. Competing theories, such as John Henryism, suggest that high active coping with chronic psychosocial stress may not always have a positive buffering effect (James, 1994). The John Henryism hypothesis, mostly studied among African American men in the U.S, posits that prolonged high effort coping with stressors that do not change may be associated with elevated risk for negative health outcomes, specifically high blood pressure (Bennett et al., 2004). Similar to ethnic groups in the U.S. (e.g., American Indians and African American men), Arab men in Israel, have been dealing with multiple social stressors over a prolonged period of time (since the establishment of the Israeli state) that are related to their status as non-Jewish citizens in a Jewish state. These include stressors related to loss of land and properties, displacement of family, living as refugees or descendants of refugees for decades, acculturation related to living in a Jewish dominated state, lack of self-determination, lower socioeconomic status compared to Jews, and exposure to discrimination at multiple levels. It is plausible that high coping efficacy among Arab men with social stressors leads to negative effects on their smoking outcomes.

## *Research Questions and Hypotheses*

The first research question of this study is whether self-reported experiences of interpersonal discrimination and perceptions of institutional group discrimination are associated with smoking-related outcomes among Arab male current and former smokers. We hypothesize that both forms of ethnic discrimination will be positively associated with smoking status and with nicotine dependence among current smokers. Our second research question is whether social support and coping efficacy moderate the association between each form of ethnic discrimination (interpersonal and institutional group discrimination) and smoking status and nicotine dependence among Arab male current and former smokers. Consistent with the stress process model, we hypothesize that social support will have a buffering effect such that the association between each form of ethnic discrimination and smoking status and nicotine dependence will be weaker for those with high social support than for those with low social support. We also hypothesize that the relationship between each form of ethnic discrimination and smoking status and nicotine dependence will vary across levels of coping efficacy.

## **Methods**

### **Sample and procedure**

The present study uses data from a cross-sectional study focused on smoking behavior of Arab men in Israel (Daoud et al., in press). To participate in the study, respondents had to be (1) an Arab male citizen of Israel, (2) between 18 and 64 years, and (3) identify as a current or former tobacco user. The study utilized a stratified

sampling design in which 20 Arab towns were randomly selected from a list of 64 Arab towns spanning northern, central, and southern Israel. Sampling of Arab towns was proportionate to the distribution of Arab towns in each of the three regions of Israel, their population size, and the socio-economic status of the locality. A list of all men residing in these 20 towns was obtained from the Israeli population registry, and a simple random sample of Arab men was drawn. Data were collected between September 2012 and September 2013. Participants (n=964) were interviewed face-to-face in Arabic by trained Arab interviewers using a structured questionnaire in Arabic. The response rate for participation in the study was 83%.

Our data management approach went as follows. First, we examined the data for missing values. A total of 100 participants had missing values on some variables, primarily on the individual items that comprise the perceived institutional group discrimination (IGD) measure. There were no statistically significant differences between those with missing data and those without missing data on any of the variables included in our analyses, except for employment status. Participants with missing data were more likely to be unemployed than those without missing data. Second, missing values on all variables used in our analysis, except for the outcome variables (i.e., smoking status and nicotine dependence) and nominal variables of marital status, employment, and national identity for which there were small numbers of missing data, were multiply imputed using the *mi impute chained* command in Stata version 13. Third, for this study we employed two final analytic samples. The first, is the full sample of current and former smokers (n=939; n=777 current smokers, n=162 former smokers)



and was used to estimate the relationship between each form of ethnic discrimination and smoking status. The second is a derived subsample of current smokers only (n=705) and was used to estimate the relationship between each form of ethnic discrimination and nicotine dependence. The discrepancy in the sample size of current smokers in the full sample and the sample size of smokers in the subsample is attributed to missing on the outcome variable of nicotine dependence (n=72 with missing data). Those excluded because of missing on nicotine dependence (n=72) were younger (Mean age =32) than those included in the analytic subsample (n=705) (Mean age=37), were more educated, and a higher percentage of them endorsed high IGD against Arabs. No other statistically significant differences were observed between those excluded and those included in the analytic sample of current smokers.

## **Measures**

### **Dependent variables**

**Smoking status.** Men were asked whether they currently smoked and were classified as former smokers - those who reported they had quit within the past six months or prior to that – or current smokers.

**Nicotine dependence.** The level of nicotine dependence among current smokers was assessed using the six-item Fagerstrom Test for Nicotine Dependence (FTND) measure (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991). Participants were asked: (1) how soon after you wake up do you smoke your first cigarette? (0=after 60 minutes, 1=31 to 60 minutes, 2=6 to 30 minutes and 3=within 5 minutes), (2) do you find it difficult to refrain from smoking in places where it is forbidden? (1=yes, 0=no), (3) which cigarette

would you hate most to give up? (1=the first one in the morning, 0=all others), (4) how many cigarettes per day do you smoke? (0=10 cigarettes or less, 1=11 to 20 cigarettes, 2=21 to 30 cigarettes, and 3=31 cigarettes or more), (5) do you smoke more frequently during the first hours of waking than during the rest of the day? (1=yes, 0=no), and (6) do you smoke if you are ill that you are in bed most of the day? (1=yes, 0=no). Per convention, values were summed across items (range 0-10) (Heatherton et al., 1991). Higher numbers indicate greater nicotine dependence. The variable was modeled as continuous in all analyses.

### **Independent variables**

***Interpersonal ethnic discrimination (EOD-A)***. We assessed self-reported experiences of interpersonal ethnic discrimination using an adapted Arabic version of the “Experiences of Discrimination” (EOD) scale (Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005; Osman, Daoud, Walsemann, Bell, & Thrasher, unpublished manuscript). The items were adapted to reflect settings where Arabs in Israel are likely to experience interethnic interactions with the Jewish majority and hence where interpersonal discrimination may occur. Participants were asked to indicate how often, in their lifetime, they had been discriminated against or treated unfairly because they were Arab in the following nine settings: while getting health care services, in the street or in public places, while searching for a job, at their workplace, while getting services from public institutions, while interacting with the police, while searching for housing in mixed Arab-Jewish or Jewish cities, while applying for or studying in college or university, and while in the airport. Response options were (0) never, (1) once, (2) 2-3 times, and (3) 4 times or

more (Cronbach's alpha .80). Scores were summed across all items (range 0-27) with higher numbers indicating higher self-reported interpersonal ethnic discrimination. Results from psychometric examination supports the validity of this adapted measure (Osman et al., unpublished manuscript).

***Perceptions of Institutional Group Discrimination (IGD).*** Participants' perceptions of ethnic discrimination against Arabs as an ethnic group was assessed using the "Institutional Group Discrimination" (IGD) scale (Osman et al., unpublished manuscript). The measure was developed specifically for this study and demonstrates good psychometric properties in this population (Osman et al., unpublished manuscript). The measure included 8 items that asked for the level of participants' agreement with statements that describe social inequalities between Arabs and Jews across various domains (e.g., education, employment, infrastructure, resource allocation and others). For example, "Arabs are generally portrayed in a negative way in the Israeli media", "Arabs in Israel have less employment opportunities compared to Jews", and "Arab towns are underdeveloped compared to Jewish towns" (See full measure in appendix A). Response options were measured on a four-point likert scale, ranging from strongly disagree to strongly agree. Scores were summed across all items (range 0-24) with higher numbers indicating greater ethnic institutional discrimination against Arabs (Cronbach's alpha .91). Because of low variability in participant responses in our sample (Mean=18.6, SD=4.6, Coefficient of variation <1) we categorized this variable into: "low perceived IGD" (score 0-15), "moderate perceived IGD" (score 16-20), and "high perceived IGD" (score 21-24).

**Coping efficacy.** Coping efficacy was measured using two items adapted from Manne & Glassman (2000). Participants were asked to think of a problem that they were dealing with lately and rate how well they think they were dealing (1) with the changes and disruptions in their lives imposed by this problem, and (2) with the emotional stresses imposed on them by the problem. Both items were rated on a 5-point scale: (0) not dealing with any problem (1) not well at all (2) not well (3) sometimes not well and sometimes well (4) well, and (5) extremely well. Previous research that used similar questions to assess the persons' appraisal of their coping strategies support the construct validity of those questions (Aldwin & Revenson, 1987; Daoud, Soskolne, & Manor, 2009a, 2009b). The two items were highly correlated ( $r=.85$ ). We calculated the sum score of both items for each participant (range 0-10, Mean=6.5, SD=2.3) with participants who reported not dealing with any problem coded as 0. Then, we created a series of indicator variables for the following categories: "0" not dealing with any problem, "1" low coping efficacy (scores 1-6), and "2" high coping efficacy (scores 7-10).

**Social support.** Social support was measured using six items adapted from Karlsson, Sjostrom, and Sullivan (1995). Participants were asked how frequently they received the following types of support: (1) someone gave them information, guidance, or advice during crisis, (2) someone gave them practical help when they needed it, (3) someone that they could trust and talk to about themselves and their problems, (4) someone that shows affection and closeness toward them, (5) someone who supports them emotionally in times of crisis, and (6) someone who can provide them with material help (e.g., money). Response options were 0=never, 1=rarely, 2=sometimes, 3=often, and

4=all the time. Responses were summed across items (range 0-24, Mean=16.0, SD=5.8) and dichotomized using the 50<sup>th</sup> percentile as the cutoff point into “low social support” (0-15) and “high social support” (16-24). The measure has been used in previous studies on Arabs in Israel and has shown good reliability and construct validity (Daoud et al., 2009a, 2009b).

**Control variables.** Age (range 18-64) was measured in years. Because of the small number of unmarried men, the variable marital status was collapsed into “married” versus “unmarried” with the latter category including single, divorced, widowed, and separated. Education assessed the highest level of school the participant completed and was categorized as middle school or less, vocational or regular high school, and beyond high school education including college or university. Subjective economic position was assessed as the participant’s ranking of his family’s income relative to other families in Israeli society and categorized as worse or much worse, similar, and better or much better. Employment status was measured as employed versus not working. Lastly, the participant’s national identity was assessed by asking participants whether they identified as (1) Palestinian, (2) Arab, (3) Arab Palestinian, (4) Israeli, (5) Arab Israeli, or (6) Israeli Palestinian. Responses were collapsed into two categories with the first three categories coded as Arab\Palestinian and the later three categories coded as Israeli.

### **Statistical analysis**

Separate regression models were estimated for interpersonal discrimination and for institutional group discrimination as the main explanatory variables. To examine the association between each form of ethnic discrimination and smoking status, we

estimated logistic regression models. To examine the association between each form of ethnic discrimination and nicotine dependence, we estimated OLS regression. Our model building process went as follows. First, we examined the association between each form of discrimination and smoking status or nicotine dependence, adjusting for age, marital status, education, subjective economic position (SEP), employment status, and national identity (Model 1). Next, we further adjust for coping efficacy and social support to estimate their main effect (Model 2). In Model 3, we include an interaction term between ethnic discrimination (interpersonal or institutional) and coping efficacy. In Model 4, we included an interaction term between ethnic discrimination and social support. For models with interpersonal discrimination (EOD-A), the interaction terms were continuous by categorical interactions (i.e., EOD-A\*low coping efficacy, EOD-A\*not dealing with any problem; EOD-A\*high social support). For models with institutional group discrimination (IGD), the interactions were categorical by categorical interactions (i.e., Moderate IGD\*low coping efficacy, moderate IGD\*not dealing with a problem, high IGD\*low coping efficacy, high IGD\*not dealing with a problem; moderate IGD\*high social support, high IGD\* high social support). All models were estimated using the *mi estimate* command in Stata version 13.

## Results

### Sample characteristics

Table 4.7 presents descriptive statistics for the analytic samples. The first analytic sample (n=939) included both current smokers (83%) and former smokers (17%). The mean age was 37.2 (SD=13.1, range 18-64). Most participants were married

(66%) and employed (81%). Over 80% had a high school education or less. Forty-percent reported their income was worse or much worse relative to families in Israeli society. Forty-two percent reported experiencing interpersonal ethnic discrimination (EOD-A) at least once in their lifetime. The majority of the sample reported moderate (55%) to high (24%) levels of perceived institutional group discrimination (IGD).

The second analytic subsample included current smokers only (n=705; Table 4.7). The mean level of nicotine dependence (FTND) among current smokers was 4.2 which indicates a low to moderate level of nicotine dependence (SD=2.6, range 0-10). Forty-six percent reported experiencing interpersonal ethnic discrimination at least once in their lifetime. Most participants reported moderate (58%) to high (23%) perceived IGD.

#### **Interpersonal ethnic discrimination (EOD-A)**

Adjusting for socio-demographics, greater self-reported experiences of interpersonal ethnic discrimination was associated with higher likelihood of being a current smoker compared to a former smoker [OR = 1.20, 95% CI 1.09, 1.32] (Model 1, Table 4.8). Greater interpersonal ethnic discrimination continues to be associated with higher likelihood of being a current smoker than a former smoker [OR = 1.18, 95% CI 1.07, 1.30] after adjustment for coping efficacy and social support (Model 2). Compared to men with high coping efficacy, men with low coping efficacy [OR = 2.49, 95% CI 1.65, 3.75] were more likely to be current smokers than former smokers. Social support was not significantly associated with smoking status. We found no statistically significant interaction between interpersonal ethnic discrimination and coping efficacy (Model 3) or social support (Model 4) when predicting smoking status.

Table 4.9 presents results from OLS regressions predicting nicotine dependence. Greater interpersonal ethnic discrimination was significantly and positively associated with nicotine dependence [ $b = 0.06$ ,  $SE = 0.03$ ,  $p < .05$ ] (Model 1). Compared to men with high coping efficacy, men who reported not currently dealing with any problem had higher nicotine dependence [ $b = 1.05$ ,  $SE = 0.40$ ,  $p < .01$ ]. Coping efficacy and social support were not significantly associated with nicotine dependence (Model 2). Coping efficacy did not moderate the association between interpersonal ethnic discrimination and nicotine dependence (Model 3). In Model 4, there was a statistically significant interaction between interpersonal ethnic discrimination and social support [ $b = -0.18$ ,  $SE = 0.05$ ,  $p < .01$ ]. Whereas interpersonal ethnic discrimination was unassociated with nicotine dependence among men with high social support, among men with low social support greater interpersonal ethnic discrimination was associated with higher levels of nicotine dependence (see Figure 4.2).

#### **Perceptions of Institutional Group Discrimination (IGD)**

Controlling for socio-demographic variables (Model 1, Table 4.10), perceived institutional group discrimination (IGD) was unassociated with smoking status. In the main effect model (Model 2) perceived IGD continues to be unassociated with smoking status. Compared to men with high coping efficacy, men with low coping efficacy [OR = 2.60, 95% CI 1.73, 3.91] were more likely to be a current smoker than a former smoker. Social support was unrelated to smoking status. Coping efficacy (Model 3, Table 4.10) and social support (Model 4, Table 4.10) did not moderate the association between perceived IGD and smoking status.



In OLS regression models (Model 1, Table 4.11), controlling for socio-demographic variables, those with moderate perceived IGD had lower nicotine dependence than those with low perceived IGD [ $b = -0.72$ ,  $SE = 0.29$ ,  $p < .05$ ]. There was no statistically significant difference in nicotine dependence between men with high perceived IGD and men with low perceived IGD. Similar results were observed in the main effect model (Model 2). Social support was unassociated with nicotine dependence in the main effect model. With regard to coping efficacy, men who reported not currently dealing with any problem had higher nicotine dependence than men with high coping efficacy [ $b = 1.19$ ,  $SE = 0.41$ ,  $p < .01$ ]. We found no statistically significant interaction between perceived IGD and coping efficacy (Model 3, Table 4.11) when predicting nicotine dependence. There was a statistically significant interaction between perceived IGD and social support (Model 4, Table 4.11). Among men with high social support, high perceived IGD was associated with lower nicotine dependence [ $b = -1.54$ ,  $SE = 0.57$ ,  $p < .01$ ] (see Figure 4.2.3).

## Discussion

This study applied the stress process model (Pearlin, 1989) to understand the link between ethnic discrimination and smoking-related outcomes among Arab current and former smokers who are citizens of Israel. We conceptualized ethnic discrimination as a social stressor that stems from or is influenced by Arabs' ethnic minority status in Israel. We examined whether two forms of ethnic discrimination, self-reported experiences of interpersonal discrimination and perceived institutional group discrimination, were associated with smoking-related outcomes, among Arab men, a

population that exhibits persistently high rates of smoking (i.e., 46.6% in 2014) (MOH, 2015).

The results support a positive link between self-reported interpersonal ethnic discrimination and smoking status and nicotine dependence. Higher interpersonal ethnic discrimination was associated with greater likelihood of being a current than a former smoker and with higher levels of nicotine dependence among smokers. These results are consistent with findings from previous research in the U.S that linked interpersonal ethnic discrimination to greater odds of smoking than non-smoking (Borrell et al., 2007, 2010; Corral & Landrine, 2012; Horton & Loukas, 2013; Landrine & Klonoff, 1999; Lorenzo-Blanco & Cortina, 2013; Purnell et al., 2012), as well as with studies that linked everyday discrimination to reduced likelihood of successful smoking cessation (Kendzor et al., 2014a) and to greater nicotine dependence among smokers in the US (Kendzor et al., 2014b). Taken together, our findings are in accord with studies that show that increased stress is associated with increased likelihood of smoking and with higher smoking intensity (Ng & Jeffery, 2003; Todd, 2004). Since higher smoking intensity is associated with lower likelihood of successful cessation, exposure of Arab men to interpersonal discrimination may indirectly hinder cessation in this population.

Perceptions of institutional group discrimination (IGD) has never been studied in relation to health outcomes. In our study, this form of perceived discrimination was not associated with smoking status. Contrary to what we expected, perceived IGD had a negative association with nicotine dependence in the main effect model. Men who reported moderate perceived IGD had lower level of nicotine dependence than men

who reported low perceived IGD. Indeed, the impact of this form of discrimination on health outcomes in general and on smoking behavior specifically is unclear. Our findings of some association of perceived IGD with smoking-related outcomes underscore the need to assess multiple forms of ethnic discrimination as sources of social stress for minority groups. This is especially important in ethnic groups, such as Arabs in Israel, for whom discrimination at the personal level may not always be the main form of discrimination that they endure.

Consistent with the stress process model, we found partial support for the buffering hypothesis of social support. Social support moderated the relationship between both forms of ethnic discrimination and nicotine dependence. At high social support, self-reported interpersonal ethnic discrimination appears unrelated to nicotine dependence, but at low social support, increasing interpersonal discrimination is associated with increasing levels of nicotine dependence. Similarly, among Arab men with high social support, high perceived IGD was associated with lower nicotine dependence. Findings from studies in the U.S. are inconsistent on whether social support buffers the effects of ethnic discrimination and health outcomes. Some studies have found that social support moderates this relationship (Mossakowski & Zhang, 2014; Kim, 2014; Noh & Kaspar, 2003) while others have not (Gee, et al., 2006b; Yoo & Lee, 2005). None of these studies, however, looked at smoking-related outcomes. Indeed, research on discrimination suggests that seeking social support is a commonly used coping strategy following interpersonal discriminatory events (Krieger, 1990; Lalonde, Majumder, & Parris, 1995; Mellor, 2004; Shorter-Gooden, 2004; Swim, Hyers,

Cohen, Fitzgerald, & Bylsma, 2003; Thompson Sanders, 2006). Over 90% of Arab citizens of Israel live in homogenous segregated Arab towns (CBS, 2011). Also, Arabs tend to have large nuclear families and to live in close proximity with their extended family, all of which have the potential to confer high levels of social support (Pines & Zaidman, 2003; Daoud et al., 2009a). It is possible that higher availability of social support for Arabs may translate into higher likelihood of seeking social support when discrimination occurs; hence it may influence whether the person resorts to tobacco use to mitigate discrimination related stress.

The independent effect of coping efficacy on smoking-related outcomes was in the expected direction. Those with low coping efficacy (i.e., believed that they were not coping well with a recent problem) were more likely to be current smokers and had higher nicotine dependence levels compared to those with high coping efficacy (i.e., those who believed that they were dealing well with a recent problem). Coping efficacy, however, did not moderate the effects of either form of discrimination on smoking status or nicotine dependence. We are unaware of any study that has looked at coping efficacy as a moderator in the link between discrimination and smoking. Nevertheless studies on coping with discrimination stress show that substance use and smoking are potential coping mechanisms that people use when confronted with discrimination (Gerrard et al., 2012). Furthermore, studies show that individuals with high self-esteem or self-efficacy, those who hold positive views of others and the world around them, as well as those who use active coping strategies experience less negative effects of discrimination (Moradi & Risco, 2006; Pascoe & Smart Richman, 2009; Umaña-Taylor,

Vargas-Chanes, Garcia, & Gonzales-Backen, 2008; Yoo & Lee, 2005). In contrast to this buffering effect, some studies have demonstrated that prolonged high active coping (i.e., John Henryism) with stress is associated with negative health outcomes (Bennet et al, 2004; James, 1994). The use of a coping efficacy measure rather than an assessment of the actual coping strategies that Arab men use to cope with stress may have resulted in the null findings on moderating effects of coping in our study.

While about 40% of men in our sample reported any experiences with discrimination at the personal level, the vast majority of men (i.e., >80%) endorsed strong perceptions of institutional discrimination against Arabs as a group (IGD). This finding is in accord with the personal/ group discrimination discrepancy (PGDD) phenomenon that has been raised and discussed in studies outside of the health literature. The PGDD phenomenon stipulates that people perceive higher levels of discrimination directed at their ethnic group than personal discrimination directed at themselves as individual members of that group (Crosby 1984; Guimond & Dube-Simard, 1983; Taylor et al., 1990). Existing literature on PGDD offer some explanations for this discrepancy, such as denial or minimization of personal discrimination, exaggeration of group discrimination, and cognitive and emotional biases related to information processing (e.g., recall biases and discomfort in confronting one's own victimization) (Crosby, 1984). However, no study has examined whether one form of discrimination (personal vs group) matters more or less for health than the other.

Our findings suggest that interpersonal discrimination is more strongly associated with smoking outcomes among Arab men than perceptions of institutional

group discrimination. While we measured actual experiences of interpersonal discrimination that participants endured and reported, the IGD reflects general perceptions of Arabs about the way their ethnic group is perceived and treated compared to Jews in the Israeli society. Moreover, personal insults such as being the victim of discrimination perpetrated by individuals is more proximal to one's self than perceptions of discrimination against the entire ethnic group, hence, may more profoundly shape the health behavior of individuals.

In this study we assessed perceptions of institutional group discrimination. Men in our sample expressed extremely strong perceptions of institutional discrimination against Arabs with very low variation in their responses. This low variability could be a function of the limited sample characteristics (men only, smokers and former smokers); however, it could also reflect the extent to which institutional discrimination against Arabs in Israel is systematic and pervasive. Perhaps investigating perceptions of institutional group discrimination in relation to health outcomes is more informative when studying different ethnic groups that are subject to different levels of institutional discrimination rather than when studying within ethnic group effects.

Comparing rates of self-reported interpersonal ethnic discrimination from our study with rates reported in previous research may be difficult because of differences in measurement approaches; however, overall rates of self-reported interpersonal ethnic discrimination in the current study appear similar to those reported in other studies (e.g., Daoud et al., 2012; Baron-Epel, Kaplan, & Moran, 2010a). For example, Daoud and colleagues (2012) found that about 40% of Arabs reported facing discrimination

sometimes, frequently or often in the past year because of their ethnicity as Arabs. Similar percentage of Arabs facing discrimination was reported in another Israeli study that sampled Jews, Arabs, and immigrants from the former Soviet Union (Baron-Epel et al., 2010a). In the current study, about 40% of Arab men reported experiencing interpersonal ethnic discrimination at least once in their lifetime. Furthermore, the majority of participants in our sample endorsed high levels of ethnic institutional discrimination against Arabs as a group. These findings demonstrate the high frequency of exposure to multiple forms of ethnic discrimination among Arab men and the need to consider discrimination as a potential cause of health disparities in Israel.

### **Limitations**

Several limitations warrant consideration. Based on the Centers for Disease Control and Prevention (2009), a current smoker is defined as someone who has smoked at least 100 cigarettes in his life and who at the time of survey has smoked for some days or all days (typically the last 30 days). In the current study, smoking status was self-reported and was assessed using one question “do you smoke?”. Current smokers were defined as those who responded affirmatively to this question. Data on whether these smokers have smoked 100 cigarettes in their lifetime or have smoked in the last 30 days prior to the survey was not available. Also, given previous data on the high smoking intensity among Arab male smokers, the low levels of mean FTND (mean 4.2, range 0-10) in our sample of current smokers was surprisingly low. Participants in our study may have under-reported their smoking behavior or over-reported their cessation behaviors. Other indicators of smoking behavior, however, such as the

average number of years smoking (range 1-58 years, Mean 16 years, Median 14 years) and number of cigarettes per day (about 80 % smoke more than half a pack of cigarettes per day) show that the majority of smokers in our sample are not light smokers and likely meet the criteria of smoking at least a 100 cigarettes in their life time.

The exclusion of male nonsmokers and women from our sample may have compromised the internal validity of the study. Those segments of the Arab population are important for our ability to observe the true breadth of experiences and perceptions of ethnic discrimination as they manifest in the population. Hence, our results may underestimate the true relationship between discrimination and smoking status among Arab men in Israel.

Perceptions and experiences of ethnic discrimination in this study were self-reported, and may be affected by recall bias, social desirability, or fear of disclosing information on discrimination. The use of Arab interviewers to collect data in the participants' homes is likely to minimize social desirability bias and decrease participants' fear to discuss discrimination experiences (Davis, 1997; Davis & Silver, 2003), but is unlikely to eliminate those biases entirely. Social desirability in responses to the IGD measure may have resulted in participants strongly agreeing with the vast majority of items, and hence, aggravated the low variation in responses to this measure and weakened the associations between perceived institutional discrimination and smoking outcomes that we could observe.



## Conclusions

In light of the persistent high smoking prevalence among Arab men in Israel it is important to understand the factors that promote smoking or hinder cessation in this population. Our study is the first to assess multiple forms of ethnic discrimination and their associations with smoking-related outcomes among Arab men. The results suggest that perceptions of both interpersonal and institutional group discrimination play a role in shaping smoking outcomes among Arab men. Interpersonal ethnic discrimination, however, appears to have a stronger association to smoking outcomes than perceptions of institutional group discrimination. Consistent with the stress process model, social support appears to buffer the effect of interpersonal discrimination on the level of nicotine dependence among male smokers. Efforts to reduce ethnic discrimination, a social stressor, should be considered as they may not only reduce smoking, but also improve other health-related outcomes among Arabs in Israel.

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**Table 4.1** Socio-demographic characteristics of the study analytic sample (n=703)

Variables	% or mean (SD)
<b>Age (range 18-64)</b>	38 (13)
<b>Marital status</b>	33
Unmarried	67
Married	
<b>Education</b>	
Primary school	5
Middle school	16
Vocational high school	9
Regular high school	50
Above high school education	8
University	12
<b>Subjective economic position (SEP)</b>	
Worse	40
Similar	52
Better	8
<b>Employment status</b>	
Unemployed	17
Employed	83
<b>Ethnic identity</b>	
Palestinian	3
Arab	12
Arab Palestinian	29
Israeli	7
Arab Israeli	39
Israeli Palestinian	10

*Notes.* Analysis based on participants with no missing data. Subjective economic position (SEP) is compared to families in the Israeli society.



**Table 4.2** Distribution of the adapted “Experiences of Discrimination” scale (EOD-A) items (n=703)

In each of these places\situations, how often, in your lifetime, have you been discriminated against or treated unfairly because of being an Arab?					
Item	Never	Once	2-3 times	4 times or more	Missing
	%	%	%	%	%
1. In the street or in public places <sup>a</sup>	78	12	7	3	0.8
2. While getting health care service <sup>a</sup>	91	6	2	1	0.5
3. While searching for a job <sup>a</sup>	83	8	6	3	0.5
4. At your work place <sup>a</sup>	88	6	3	3	1.2
5. While getting services from public institutions <sup>a</sup>	86	9	4	1	0.5
6. While interacting with the police <sup>a</sup>	82	9	5	4	0.9
7. While studying in college or university <sup>a</sup>	94	3	2	1	0.6
8. While searching for housing in mixed cities <sup>a</sup>	93	4	2	1	0.6
9. In the airport <sup>b</sup>	82	12	4	2	0.7

**Summary frequency score of life time exposure to ethnic discrimination**

Observed range	0-22
Mean (SD)	1.86 (3.65)
Skewness	2.65
Kurtosis	11.93

*Notes.* Percentages across response options were based on participants with no missing data (n=703). Percentage of missing data on each items were based on the full study sample (n=964), <sup>a</sup> adapted items, <sup>b</sup> new item.

**Table 4.3** Distribution of items measuring perceived institutional group discrimination (IGD) (n=703)

Items	Strongly Disagree	Disagree	Agree	Strongly Agree	Missing
	%	%	%	%	%
1. Arab towns and villages lack adequate health care services compared to Jewish towns	4	8	38	50	4
2. Arabs are generally portrayed in a negative way in the Israeli media	4	9	47	40	6
3. There are laws in Israel that discriminate against Arabs	3	5	49	43	5
4. Arabs in Israel have less employment opportunities compared to Jews	2	4	39	55	4
5. Arabs in Israel do not have enough influence in the political system	3	4	42	51	7
6. The use of military–service criterion as a condition for employment discriminates against Arabs	5	8	36	51	7
7. Arab towns are underdeveloped compared to Jewish towns	2	2	36	60	3
8. Arab schools enjoy less funding and resources compared to Jewish schools	3	7	43	47	9
	<b>Observed range</b>	<b>Mean (SD)</b>	<b>Skewness</b>	<b>Kurtosis</b>	
Summary score: Institutional group discrimination (IGD)	0-24	18.97 (4.45)	-1.42	6.55	

*Notes.* Percentages across response options were based on participants with no missing data (n=703). Percentage of missing data on each items were based on the full study sample (n=964).

**Table 4.4** Results from confirmatory factor analysis (CFA) of the adapted “Experiences of Discrimination” scale (EOD-A) (n=703)

<b>Model fit statistics</b>			
RMSEA [90% CI]	0.054 [0.041-0.068]		
CFI	0.967		
TLI	0.956		
<b>Items</b>	<b>Standardized Factor Loadings</b>	<b>SE</b>	<b>R-squared</b>
1. In the street or in public places	0.75***	0.04	0.56***
2. While getting health care services	0.74***	0.05	0.54***
3. While searching for a job	0.77***	0.03	0.59***
4. At your work place	0.76***	0.04	0.58***
5. While getting services from public institutions	0.69***	0.05	0.47***
6. While interacting with the police	0.68***	0.04	0.46***
7. While studying in college or university	0.67***	0.06	0.45***
8. While searching for housing in mixed cities	0.76***	0.05	0.58***
9. In the airport	0.65***	0.04	0.42***
<b>Reliability</b>			
Cronbach’s alpha	0.90		
Range inter-tem correlations	0.30-0.67		

*Notes.* Analyses based on participants with no missing data (n=703). WLSMV estimator used. \*\*\*p<.001, \*\*p<.01, \*p<.05.

**Table 4.5** Results from split sample exploratory factor analysis (EFA) of perceived institutional group discrimination (IGD) measure (n=703)

	<b>Subsample I (n=351)</b>	<b>Subsample II (n=352)</b>		
<b>Eigenvalues</b>				
Factor 1	5.312	5.348		
Factor 2	0.906	0.660		
<b>Model fit statistics</b>				
RMSEA	0.159 [0.139-0.179]	0.081 [0.060-0.103]		
CFI	0.953	0.986		
TLI	0.934	0.980		
<b>Items</b>	<b>Factor loadings</b>	<b>SE</b>	<b>Factor loadings</b>	<b>SE</b>
1. Arab towns and villages lack adequate health care services compared to Jewish towns	0.71*	0.03	0.68*	0.03
2. Arabs are generally portrayed in a negative way in the Israeli media	0.84*	0.02	0.79*	0.03
3. There are laws in Israel that discriminate against Arabs	0.83*	0.02	0.83*	0.02
4. Arabs in Israel have less employment opportunities compared to Jews	0.87*	0.02	0.88*	0.02
5. Arabs in Israel do not have enough influence in the political system	0.78*	0.02	0.76*	0.03
6. The use of military–service criterion as a condition for employment discriminates against Arabs	0.82*	0.02	0.75*	0.03
7. Arab towns are underdeveloped compared to Jewish towns	0.83*	0.02	0.87*	0.02
8. Arab schools enjoy less far funding and resources compared to Jewish schools	0.69*	0.03	0.75*	0.03
<b>Reliability</b>				
Cronbach’s alpha	0.93		0.93	
Range inter- item correlation	0.44-0.76		0.44-0.76	

*Notes.* Analyses based on participants with no missing data (n=703). Items specified as ordinal. WLSMV estimator was used. Results are based on oblique (GEOMIN) rotation in Mplus. \*\*\*p<.001, \*\*p<.01, \*p<.05

**Table 4.6** Unadjusted linear regression models predicting ethnic discrimination (n=703)

	Interpersonal ethnic discrimination (EOD-A)		Institutional group discrimination (IGD)	
	b	SE	b	SE
<b>Interpersonal ethnic discrimination (EOD-A)</b>	-	-	0.27***	0.05
<b>Institutional group discrimination (IGD)</b>	0.14***	0.03	-	-
<b>Single-item discrimination</b>				
Never	-	-	-	-
Rarely	1.97***	0.24	1.09**	0.39
Sometimes	3.49***	0.26	2.17***	0.37
Many times	6.98***	0.41	2.52***	0.69
<b>Smoking status</b>				
Former smoker	-	-	-	-
Current smoker	1.10***	0.23	0.96*	0.47
<b>Stressful life events</b>	0.53***	0.12	0.21	0.14
<b>Chronic stress</b>	0.44***	0.08	0.24**	0.09
<b>National identity</b>				
Arab\Palestinian	-	-	-	-
Israeli	-0.75**	0.25	-2.11***	0.32
<b>Education</b>				
Primary–middle school	-	-	-	-
Voc\Reg high school	0.18	0.29	-0.44	0.40
Beyond high school	0.47	0.39	-0.50	0.50
<b>Knowledge of smoking harms</b>	-0.14	0.15	0.09	0.22

*Note.* Analyses based on participants with no missing data. For categorical variables, reference groups were: never facing discrimination, former smoker, Arab\Palestinian national identity, and primary- middle school education; \*\*\*p<.001, \*\*p<.01, \*p<.05

**Table 4.7** Characteristics of the study analytic samples of current and former smokers

Variables	Full sample (n=939) % or mean (SD)	Smokers' subsample (n=705) % or mean (SD)
<b>Smoking status</b>		
Current smoker	83	
Former smoker	17	
<b>Fagerstrom Test for Nicotine Dependence (FTND)</b> (range 0-10)		4.2 (2.6)
<b>Interpersonal ethnic discrimination (EOD)</b> (range 0-27)	1.75 (3.2)	1.98 (3.4)
<b>Institutional group discrimination (IGD)– categories</b>		
Low	19	19
Moderate	45	46
High	36	35
<b>Age</b> (range 18-64)	37.2 (13.1)	36.8 (13.2)
<b>Marital status</b>		
Unmarried	34	37
Married	66	63
<b>Education</b>		
Primary-middle school	21	23
Vocational\regular high school	61	61
Above high school education	18	16
<b>Subjective economic position (SEP)</b>		
Worse\much worse	40	40
Similar	52	52
Better\ much better	8	8
<b>Employment status</b>		
Unemployed	19	19
Employed	81	81
<b>National identity</b>		
Palestinian	3	3
Arab	11	11
Arab Palestinian	26	26
Israeli	10	11
Arab Israeli	40	38
Israeli Palestinian	10	10

**Table 4.8** Logistic regression models of the associations of interpersonal ethnic discrimination, coping efficacy, and social support with smoking status (n=939), Israel

Variables	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
<b>Interpersonal ethnic discrimination</b>	1.20***	1.09, 1.32	1.18**	1.07, 1.30	1.15*	1.03, 1.29	1.11	0.98, 1.26
<b>Coping efficacy</b>								
High			-		-		-	
Low			2.49***	1.65, 3.75	2.15**	1.36, 3.39	2.47***	1.64, 3.72
Not coping with a problem			0.94	0.48, 1.83	1.05	0.50, 2.21	0.95	0.48, 1.83
Discrimination*low coping efficacy					1.17	0.90, 1.52		
Discrimination*not dealing with a problem					0.89	0.67, 1.19		
<b>Social support</b>								
Low			-		-		-	
High			0.80	0.55, 1.16	0.79	0.54, 1.14	0.72	0.47, 1.09
Discrimination*high social support							1.11	0.93, 1.34
<b>Age</b>	0.97**	0.95, 0.99	0.97**	0.95, 0.99	0.97**	0.95, 0.99	0.97**	0.95, 0.99
<b>Marital status</b>								
Not married	-		-		-		-	
Married	0.74	0.43, 1.26	0.75	0.44, 1.28	0.75	0.43, 1.28	0.75	0.44, 1.28
<b>Education</b>								
Primary-middle school	-		-		-		-	
Vocational \regular high school	0.59*	0.36, 0.98	0.59*	0.35, 0.99	0.60	0.36, 1.009	0.59*	0.35, 0.99
Beyond high school	0.43**	0.24, 0.78	0.47*	0.25, 0.87	0.48*	0.26, 0.89	0.46**	0.25, 0.86

**Subjective economic position (SEP)**

Worse	-		-		-		-	
Similar	1.13	0.77, 1.65	1.15	0.78, 1.71	1.15	0.77, 1.71	1.17	0.78, 1.73
Better	1.58	0.73, 3.40	1.68	0.77, 3.65	1.71	0.78, 3.71	1.70	0.78, 3.70
<b>Employment status</b>								
Unemployed	-		-		-		-	
Employed	1.44	0.93, 2.23	1.46	0.93, 2.28	1.45	0.93, 2.27	1.45	0.93, 2.27
<b>National identity</b>								
Arab\Palestinian	-		-		-		-	
Israeli	1.10	0.76, 1.58	1.18	0.82, 1.72	1.18	0.82, 1.71	1.19	0.82, 1.72

*Notes.* Model 1 adjusts for age, marital status, education, subjective economic position, employment status and national identity; Model 2: main effect model with discrimination, coping efficacy, and social support; Model 3: interaction model between discrimination and coping efficacy; Model 4: interaction model between discrimination and social support; \*p<.05, \*\*p<.01, \*\*\*p<0.001



**Table 4.9** OLS regression models of the associations of interpersonal ethnic discrimination, coping efficacy, and social support with nicotine dependence (n=705), Israel

Variables	Model 1		Model 2		Model 3		Model 4	
	b	SE	b	SE	b	SE	b	SE
<b>Interpersonal ethnic discrimination</b>	0.06*	0.03	0.06*	0.03	0.07	0.04	0.14***	0.04
<b>Coping efficacy</b>								
High			-		-		-	
Low			0.09	0.19	0.09	0.22	0.11	0.19
Not coping with a problem			1.05**	0.40	1.30**	0.46	1.07**	0.40
Discrimination*low coping efficacy					-0.0008	0.05		
Discrimination*not dealing with a problem					-0.16	0.14		
<b>Social support</b>								
Low			-		-		-	
High			0.0002	0.19	-0.002	0.19	0.35	0.22
Discrimination*high social support							-0.18**	0.05
<b>Age</b>	0.03**	0.01	0.03**	0.01	0.03**	0.01	0.03**	0.01
<b>Marital status</b>								
Not married	-		-		-		-	
Married	0.28	0.27	0.26	0.27	0.26	0.27	0.27	0.27

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**Education**

Primary-middle school	-		-		-		-	
Vocational\regular high school	-0.61*	0.26	-0.54*	0.26	-0.54*	0.26	-0.53*	0.26
Beyond high school	-1.69***	0.33	-1.57***	0.33	-1.57***	0.33	-1.45***	0.33

**Subjective economic position (SEP)**

Worse	-		-		-		-	
Similar	0.09	0.20	0.07	0.20	0.07	0.20	0.007	0.20
Better	0.58	0.38	0.50	0.38	0.51	0.38	0.37	0.38

**Employment status**

Unemployed	-		-		-		-	
Employed	-0.67**	0.25	-0.66**	0.25	-0.65*	0.25	-0.64*	0.25

**National identity**

Arab\Palestinian	-		-		-		-	
Israeli	-0.22	0.19	-0.27	0.19	-0.26	0.19	-0.24	0.19

*Notes.* Model 1 adjusts for age, marital status, education, subjective economic position, employment status and national identity; Model 2: main effect model with discrimination, coping efficacy, and social support; Model 3: interaction model between discrimination and coping efficacy; Model 4: interaction model between discrimination and social support; \*p<.05, \*\*p<.01, \*\*\*p<0.001

**Table 4.10** Logistic regression models of the associations of institutional group discrimination (IGD), coping efficacy, and social support with smoking status (n=939), Israel

Variables	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
<b>Institutional group discrimination (IGD)</b>								
Low	-		-		-		-	
Moderate	1.21	0.72, 2.03	1.08	0.63, 1.85	1.009	0.53, 1.91	1.31	0.58, 2.91
High	1.005	0.59, 1.69	0.95	0.55, 1.63	0.98	0.51, 1.87	1.01	0.42, 2.40
<b>Coping efficacy</b>								
High			-		-		-	
Low			2.60***	1.73, 3.91	2.61	0.88, 7.70	2.59***	1.72, 3.90
Not coping with a problem			0.95	0.55, 1.63	0.84	0.25, 2.75	0.94	0.48, 1.83
Moderate discrimination*low coping efficacy					1.10	0.31, 3.85		
Moderate discrimination*not dealing with a problem					1.40	0.29, 6.67		
High discrimination*low coping efficacy					0.89	0.24, 3.33		
High discrimination*not dealing with a problem					0.72	0.10, 5.03		
<b>Social support</b>								
Low			-		-		-	
High			0.81	0.56, 1.18	0.80	0.55, 1.16	0.98	0.41, 2.32

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Moderate discrimination*high social support	0.71	0.25, 1.97
High discrimination*high social support	0.88	0.30, 2.57

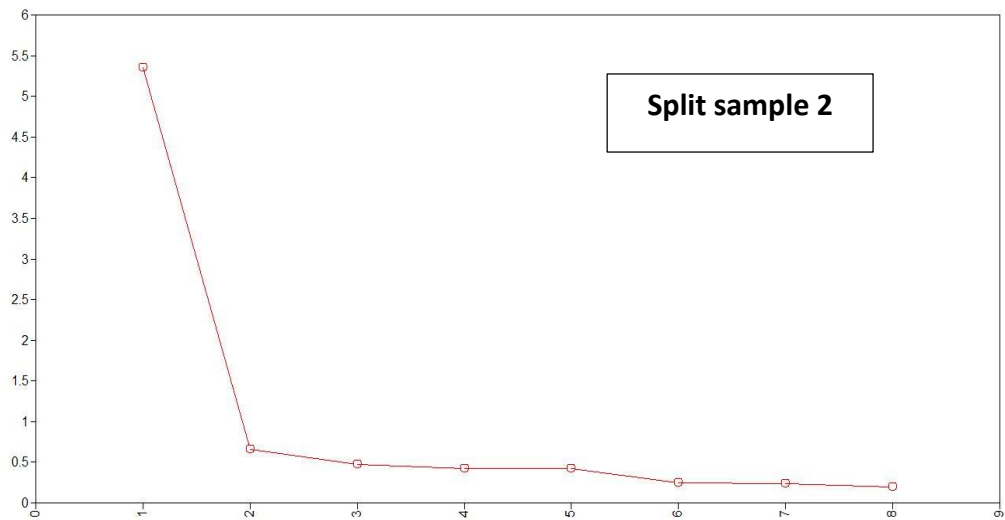
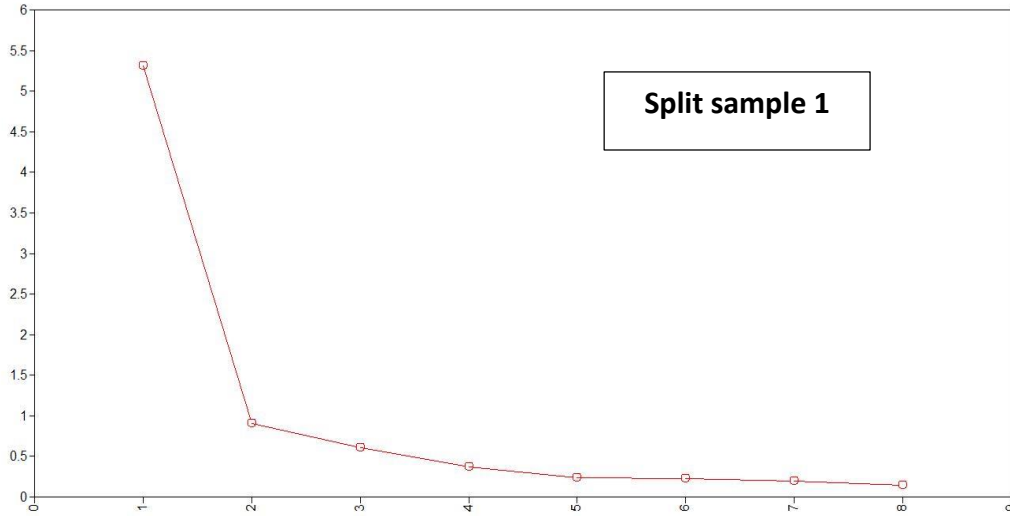
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*Notes.* Model 1 adjusts for age, marital status, education, subjective economic position, employment status and national identity; Model 2: main effect model with discrimination, coping efficacy, and social support; Model 3: interaction model between discrimination and coping efficacy; Model 4: interaction model between discrimination and social support; \*p<.05, \*\*p<.01, \*\*\*p<0.001

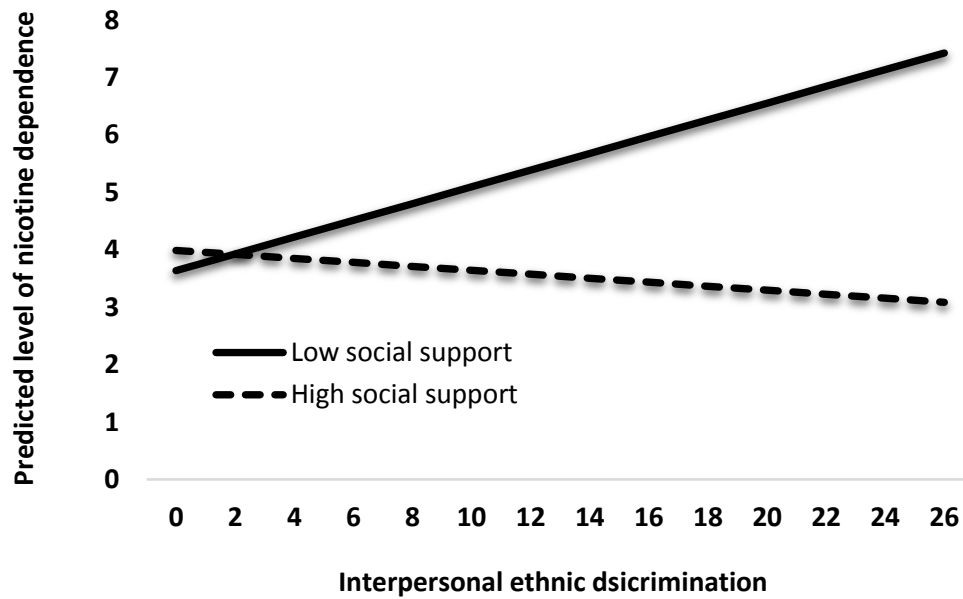
**Table 4.11** OLS regression models of the associations of institutional group discrimination (IGD), coping efficacy, and social support with nicotine dependence (n=705), Israel

Variables	Model 1		Model 2		Model 3		Model 4	
	b	SE	b	SE	b	SE	b	SE
<b>Institutional group discrimination (IGD)</b>								
Low	-		-		-		-	
Moderate	-0.72*	0.29	-0.70*	0.29	-0.98*	0.38	-0.40	0.44
High	-0.14	0.29	-0.05	0.29	0.16	0.39	0.90	0.47
<b>Coping efficacy</b>								
High			-		-		-	
Low			0.12	0.19	0.25	0.47	0.04	0.19
Not coping with a problem			1.08**	0.41	0.36	0.70	1.06**	0.40
Moderate discrimination*low coping efficacy					0.25	0.55		
Moderate discrimination*not dealing with a problem					1.32	0.92		
High discrimination*low coping efficacy					-0.66	0.58		
High discrimination*not dealing with a problem					1.00	1.41		
<b>Social support</b>								
Low			-		-		-	
High			-0.10	0.20	-0.15	0.20	0.58	0.46
Moderate discrimination*high social support							-0.37	0.55
High discrimination*high social support							-1.54**	0.57

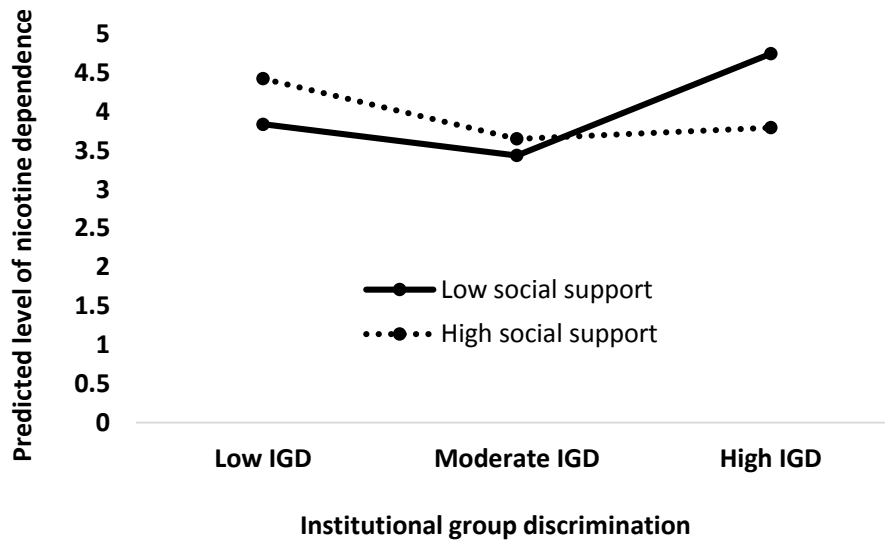
*Notes.* Model 1 adjusts for age, marital status, education, subjective economic position, employment status and national identity; Model 2: main effect model with discrimination, coping efficacy, and social support; Model 3: interaction model between discrimination and coping efficacy; Model 4: interaction model between discrimination and social support; \*p<.05, \*\*p<.01, \*\*\*p<0.001



**Figure 4.1** Scree plot from split sample exploratory factor analysis of the institutional group discrimination (IGD) measure



**Figure 4.2:** Predicted level of nicotine dependence (FTND) for low vs. high social support by self-reported interpersonal ethnic discrimination among Arab male smokers in Israel. Notes: Adjusted for age, marital status, education, subjective economic position, employment status, national identity, and coping efficacy (Model 4, Table 4.3).



**Figure 4.3:** Predicted level of nicotine dependence (FTND) for low vs. high social support by institutional group discrimination (IGD) and coping efficacy among Arab male smokers in Israel. Notes: Adjusted for age, marital status, education, subjective economic position, employment status, national identity, and coping efficacy (Model 4, Table 4.11).



## CHAPTER 5

### SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

#### 5.1 SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS FOR PAPER 1:

##### PSYCHOMETRIC PROPERTIES OF MEASURES TO ASSESS ETHNIC DISCRIMINATION: A STUDY OF ARAB MALE CURRENT AND FORMER SMOKERS IN ISRAEL

The harmful effects of discrimination on social, economic, and health outcomes has been supported by many studies. Discrimination on the basis of ethnic origin is a social stressor that operates on multiple levels, interpersonal and institutional, and is likely to harm the social, economic, and psychological wellbeing of individuals and groups (Krieger, 1999). Valid measures to assess perceptions of and experiences with ethnic discrimination are crucial for our ability to study the causes and effects of discrimination. Though several psychometrically sound measures exist to assess interpersonal ethnic discrimination, no measures that we are aware of was developed to assess perceptions of ethnic institutional group discrimination. Furthermore, since the majority of instruments on discrimination were developed in the United States in the English language (Bastos et al., 2010), studying discrimination in societies other than the US requires cultural and linguistic adaptation of existing measures to reflect discrimination as it operates in the differing contexts, or it requires the development of

new measures as needed.

In this study, we assessed two forms of ethnic discrimination that are relevant to the lived experiences of Arab citizens of Israel. Arabs in Israel are an ethnic minority within a Jewish dominated state and are subject to various forms of ethnic discrimination, interpersonal and institutional. We used an existing measure, the “Experiences of Discrimination” (EOD) scale by Krieger et al., (2005) to assess interpersonal ethnic discrimination. The measure was translated to the Arabic language and the items were adapted to reflect settings in which Arabs in Israel are likely to interact with the majority Jewish population, hence discrimination may occur.

Furthermore, we developed a new measure to assess perceptions of institutional group discrimination (IGD) against Arabs as an ethnic minority. We evaluated the psychometric properties of the two Arabic language instruments using data from Arab male current and former smokers. We found that both measures, the EOD-A and the new IGD, had good psychometric properties. Each of the measures had a unidimensional factor structure, and good internal consistency reliability. We also found evidence that supports the measures’ convergent and discriminant validity. These results indicate that the Arabic EOD-A and new IGD measure can be useful for assessing ethnic discrimination and its effects among Arab male current and former smokers in Israel.

Although both measures in our study show good psychometric properties, we have some recommendations for future research to improve the performance of these measures. First, we recommend that future research replicates the finding from our study using more representative samples of Arabs from Israel including women and

nonsmokers. Second, our measure perceptions of institutional group discrimination (IGD) suffered large amount of missing data on some items. Future research should integrate qualitative methods such as cognitive interviews, expert review, and focus groups, to identify potential problems in the questions (Willis, 2005) that may have been responsible for the large amount of missing data in our study. Furthermore, our measure of institutional group discrimination (IGD) presented low variability in participant's responses to the vast majority of items. This finding could be a function of the real gravity and pervasiveness of institutional discrimination against Arabs as a group but could also be influenced by the characteristics of our sample. Future samples that are more representative of the Arab population in Israel than our sample may yield greater variability in participants' responses to this measure. Researchers should also consider other approaches to increase variability in participant responses such as using a wider range of possible response options and item response theory approaches. Lastly, future research should include other validation items such as measures of social desirability and acquiesce and assess the extent to which those introduce biases into Arab participant's responses to discrimination measures.

## **5.2 SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS FOR PAPER 2: ETHNIC DISCRIMINATION AND SMOKING-RELATED OUTCOMES AMONG CURRENT AND FORMER ARAB MALE SMOKERS IN ISRAEL: THE MODERATING EFFECTS OF COPING EFFICACY AND SOCIAL SUPPORT**

Ethnic minority status is associated with increased risk of exposure to social stressors such as discrimination (Pearlin, 1989). Ethnic discrimination, a social stressor, has a positive association with smoking behavior (Bennett et al., 2005; Borrell et al., 2010; Chae et al., 2008; Guthrie et al., 2002; Landrine & Klonoff, 1999; Purnell et al., 2012). Persons who experience discrimination are more likely to be smokers than nonsmokers. Studies on discrimination and smoking behavior, however, have some limitations. First, the majority of existing studies examined the effect of exposure to discrimination on the likelihood of being a current smoker as compared to nonsmoker. Very few studies have examined the association of ethnic discrimination to other smoking related outcomes such as cessation related outcomes and nicotine dependence. Second, all prior studies focused on personal experiences with ethnic discrimination, overlooking the role that other forms of ethnic discrimination, such as institutional group discrimination, may play in shaping smoking outcomes of members of ethnic minorities. Third, the vast majority of studies on ethnic discrimination and smoking and other health outcomes were conducted western countries, particularly in the United States, and may be limited in their generalizability to other non-western societies. Lastly, while the stress process model has been widely used as an overarching framework to guide studies on discrimination and health outcomes, very few studies

have attempted to test specific components of this model such as the role of personal and social resources in buffering the effects of discrimination on health.

In this study, we applied concepts of the stress process framework to a non-western population, that of Arab citizens of Israel. We examined the association between two forms of ethnic discrimination, interpersonal and institutional group discrimination, and the likelihood of being a current smoker compared to a former smoker and the level of nicotine dependence among smokers. In an effort to understand factors that may buffer the effects of discrimination on smoking outcomes we examined whether coping efficacy and social support moderate the association between each form of ethnic discrimination (interpersonal and institutional) and smoking related outcomes in this population.

Similar to findings from studies conducted in the US, interpersonal ethnic discrimination was positively linked to smoking outcomes among Arab men in Israel. Interpersonal ethnic discrimination was associated with a greater likelihood of being a current versus a former smoker. Among current smokers, interpersonal ethnic discrimination was associated with higher nicotine dependence. This association was stronger among men with low social support than among men with high social support indicating that social support appears to buffer the effect of interpersonal discrimination on nicotine dependence in this population. Overall, Arab men in this study had strong perceptions of institutional discrimination against Arabs as a group, however, this form of ethnic discrimination had a weaker association with their smoking-related outcomes than interpersonal ethnic discrimination.

Altogether, the results from this study suggest that ethnic discrimination, a social stressor, may play a role in shaping smoking related outcomes among Arab male smokers and should be considered and targeted in efforts to improve smoking outcomes in this population. Our study underscores the need for future research that explores the role of ethnic discrimination in shaping smoking behavior and other health outcomes and that takes into account multiple forms of ethnic discrimination that Arabs endure. Despite the null findings on the association between ethnic institutional group discrimination and smoking related outcomes in our sample, we recommend that future research explore the effects of this form of discrimination on smoking behavior and other health outcomes (e.g., mental health outcomes) using more representative samples of Arabs that include women and non-smokers. We also recommend that future research explore other personal and social resources that can be beneficial for Arab individuals to buffer the effects of discrimination on their health outcomes. Human rights institutions call for eliminating all forms of discrimination, including ethnic discrimination (Schwelb, 1966). Efforts have been and continue to be made to document incidents of discrimination against individuals, members of ethnic minorities in Israel, including Arabs (CAR, 2013; The Arab Association for Human Rights, 2006). Also, many have documented the extent to which Arabs in Israel endure institutional ethnic discrimination and the extent to which this form of discrimination harms Arabs socioeconomic position (Adalah, 2011). Our findings add to these efforts by showing that ethnic discrimination has a direct negative effect on the health behavior of Arab

men and should be targeted in more research, advocacy efforts, and public health interventions.

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## APPENDIX A

### THE “INSTITUTIONAL GROUP DISCRIMINATION” SCALE (IGD)

**Please indicate to what extent do you agree or disagree with the following statements:**

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Response options

- 0) Strongly disagree
  - 1) Disagree
  - 2) Agree
  - 3) Strongly agree
- 

#### Items

1. Arab towns and villages lack adequate health care services compared to Jewish towns.
  2. Arabs are generally portrayed in a negative way in the Israeli media.
  3. There are laws in Israel that discriminate against Arabs.
  4. Arabs in Israel have less employment opportunities compared to Jews.
  5. Arabs in Israel do not have enough influence in the political system.
  6. The use of military–service criterion as a condition for employment discriminates against Arabs.
  7. Arab towns are underdeveloped compared to Jewish towns.
  8. The Palestinian history is underrepresented in the educational curriculum taught in Arab schools\*.
  9. Arab schools enjoy less funding and resources compared to Jewish schools.
  10. Arab students are greatly underrepresented colleges and universities in Israel compared to Jewish students\*.
  11. In Israel, the Arabic language is perceived as inferior to the Hebrew language\*.
  12. Arabs are treated in a discriminatory way by the security personnel in the airport\*.
- 

\*items with missing data  $\geq 10\%$  were excluded from all analyses.