THE IMPLICATIONS OF ESSENTIALIST BELIEFS FOR PREJUDICE

by

Daniel W. Brickman

A dissertation submitted in partial fulfillment
Of the requirements for the degree of
Doctor of Philosophy
(Psychology)
in The University of Michigan
2009

Doctoral Committee:

Professor Phoebe C. Ellsworth, Co-Chair
Professor Susan A. Gelman, Co-Chair
Professor Brad J. Bushman
Assistant Research Scientist Toby E. Jayaratne

Acknowledgements

I would like to thank Marjorie Rhodes and my committee for their invaluable support and assistance, without which not a page of this dissertation would have been possible.

Table of Contents

List of Figures

List of Tables

Table

Chapter 1

Introduction

The goal of this dissertation is to examine how beliefs about social categories, including beliefs about the stability of social category memberships, beliefs about the discreteness of the boundaries between different social categories, and beliefs about the universality of particular types of social categories, relate to prejudice. Prejudice towards members of social categories has long been of interest to social psychologists (Allport, 1954). Studying prejudice can help shed light on important theoretical issues, such as the origins of prejudice, the cognitive mechanisms that sustain prejudice, and the implications of prejudice for processing social information. Understanding prejudice can also suggest important real-world interventions that can help reduce discriminatory behavior and inter-group violence. In this dissertation, I extend prior work on prejudice by examining mental representations of social categories in detail, and by testing how individual differences in these representations relate to prejudice.

The first two papers examine how essentialist theories about social categories relate to prejudice towards members of those categories. Psychological essentialism has been described as a set of cognitive biases which shape individuals' concepts of categories (Gelman, 2003). These biases include the beliefs that certain categories reflect the underlying, natural, structure of the world, and the beliefs that membership in such categories is immutable across development and plays a causal role in the development of

category-linked properties. For example, holding an essentialist representation of gender categories would include the belief that gender categories exist in our mind and society because nature distinguishes between women and men, as well as beliefs that gender identity is determined through biological processes that occur before birth, that gender is stable across development and different contexts, and that being born of a particular gender category *causes* the development of category-linked properties (e.g., being good at ballet vs. football; see Taylor, 1996). Categories that are viewed in essentialist terms are expected to predict many known and unknown individual properties, to be found universally, and to have sharp boundaries. Much of the work on psychological essentialism has examined concepts of animal and plant categories, and has found that people's concepts of these categories is consistent with psychological essentialism across diverse cultural contexts (Atran, 1990) from very early in development (Gelman & Coley, 1990), supporting the proposal that there are universal cognitive tendencies to essentialize some categories.

The idea that psychological essentialism shapes not only individuals' beliefs about plant and animal species categories, but also their beliefs about social categories (e.g., based on gender, race, ethnicity, or sexual orientation) as well, has long held theoretical appeal (Allport, 1954; Hirschfeld, 1996; Rothbart & Taylor, 1992). Until recently, however, the extent to which people's beliefs about social categories are consistent with psychological essentialism, or whether essentialist beliefs have implications for how social categories shape thought and behavior, had received little empirical examination. More recently, social psychological research on psychological essentialism has made significant progress (Yzerbyt, Judd, & Corneille, 2004). For

example, Haslam and colleagues (2000) examined college students' endorsement of various types of essentialist beliefs (e.g., about category naturalness, universality, discreteness) for 40 different social categories. There were several key findings: 1) individuals readily endorsed essentialist beliefs for some social categories, 2) essentialist beliefs were distinct from other beliefs about social categories (i.e. beliefs about group cohesiveness), and 3) categories varied in the extent to which people viewed them in essentialist terms, with categories that have some claim to a biological basis (e.g., gender, race) eliciting more essentialist beliefs than categories that are less often discussed in biological terms (e.g., political affiliation).

One of the primary reasons that social psychologists have been interested in essentialism is the possibility that research on essentialism can shed new light on the mechanisms that underlie prejudice, and other behavioral and social-cognitive consequences of social categorization. For some categories, the link between essentialism and prejudice appears straightforward. For example, consider the category *African Americans*. If individuals view differences between Whites and African Americans (e.g., in terms of earning potential), as causally linked to a natural, immutable, category essence, then they are likely to view such differences as natural and inevitable. In this manner, essentialist concepts can provide a justification for biased or discriminatory behavior. Indeed, for social categories based on race, increased endorsement of genetic theories (one component of psychological essentialism) has been linked to increased prejudice (Jayaratne et al., 2006). However, recent work suggests that the relation between essentialism and prejudice is not always straightforward, that essentialism and prejudice are in fact sometimes inversely related, and the relationship between the two

depends on the social category. For example, Haslam and Levy (2006) reported that genetic theories of homosexuality predicted *less* bias towards gay men. Overall, the relationship between essentialism and prejudice across different social categories remains poorly understood, and is the topic of Papers 1 and 2. In the third paper, I focus on examining the conditions under which people construct an essentialist understanding of a new category, towards the aim of understanding what types of information and contexts trigger essentialist thinking about social identity groups.

Overview

Paper 1

In the first paper, I examine how one component of psychological essentialism—the belief that genetics play a causal role in determining social category identity and category-linked properties—relates to prejudice across a wide-range of social categories. This paper contains two studies. In the first, I develop a prejudice scale that can be used across different types of social categories. In the second study, I use the new prejudice scale to test the relation between genetic theories and prejudice, by focusing on distinctions between the genetic basis of category membership and the genetic basis of associated properties.

In particular, I examine whether the relation of genetic theories to prejudice varies by how much stigma is viewed as attaching to category membership itself (instead of as attaching to category-linked properties). For example, for some categories, such as those based on sexual orientation, people are stigmatized simply for being members of particular categories (e.g., simply for being gay). For other categories, however, such as those based on race, people may be stigmatized less for simply being category members,

and more because category membership is associated with negative properties (e.g., lower achievement levels). Drawing on work by Prentice and Miller (2007), I hypothesized that when stigma attaches strongly to category membership, genetic theories of group membership will relate to less prejudice, because in this case, genetic theories serve to reduce the extent to which individuals are viewed as responsible for determining their own category identities. Alternately, I hypothesized that when stigma attaches less strongly to category membership (and more strongly to associated properties), genetic theories of group differences would relate to *more* prejudice, by making the stigmatized associated properties seem like inevitable and natural consequences of category membership. For example, genetic theories of race may lead individuals to believe that differences in achievement levels across groups have a genetic basis, and thus may relate to increased racial prejudice. In this paper, I test the hypothesis that the relation of genetic theories (as well as of theories about the role of choice in determining membership) to prejudice varies by how much stigma is viewed as attaching to category membership across 15 different social categories.

Paper 2

In the second paper, I examine how several components of psychological essentialism relate to prejudice towards people based on sexual orientation. In particular, I examine the implications for prejudice of believing that sexual orientation is stable across development, of believing that the boundaries between homosexuals and heterosexuals are discrete, and of believing that homosexuality will be found universally. Prejudice towards people based on sexual orientation remains a pervasive problem in society, thus making research on its cognitive underpinnings especially important. For

this study, I employed meta-analytic techniques to examine the relation between three distinct essentialist beliefs and prejudice towards homosexuals across all available empirical work in the field. This study provides an opportunity to test whether various types of essentialist beliefs have similar or distinct implications for prejudice. In particular, I test the hypothesis that believing that homosexuality is stable across development, as well as that homosexuality is found universally, will relate to less antigay prejudice, but that believing that the boundaries between homosexuals and heterosexuals are discrete relates to more antigay prejudice (Haslam & Levy, 2006).

Paper 3

The third paper presents an experimental study in which I examine the extent to which individuals engage in essentialist thinking about new social categories, as well as the types of information that trigger essentialist thought. As will be shown in papers 1 and 2, essentialist thinking has important implications for prejudice. Thus, understanding the conditions that foster essentialism can inform models of how and when prejudice emerges, and may provide direction for intervention work that aims to reduce prejudice or discrimination.

In this study, I measure essentialism by evaluating how much people think that social identities are determined by birth vs. by one's environment of upbringing. Because essentialism includes the belief that identity is determined through biological processes that occur before birth, essentialist thinking in this context would indicate that social identities are determined by birth (not by upbringing). To test intuitions about the origins of identity, participants are told stories in which a baby is born to parents from one novel

social group, but raised by parents from another. Participants are then asked to predict what the baby will be like as an older child, in terms of social identity and behavior.

To examine which types of information trigger essentialist thinking about identity, I varied the features that distinguished the two social groups. One hypothesis examined in this study is that information that the two social groups are genetically distinct will trigger essentialist thinking. To test this hypothesis, across conditions, I vary whether the two novel social groups (of the birth- and adoptive-parents) are described as genetically similar or distinct. Another hypothesis examined in this study is that information about social conflict between groups will *reduce* essentialism. In particular, information about conflict is expected to reduce essentialism by triggering another form of social reasoning in which category memberships are understood as determined by membership in cooperative groups, thus favoring the view that social identity will be determined by membership in the adoptive family's coalitional group. Secondly, this work will help to clarify the distinct implications for prejudice of specific types of essentialist beliefs. Third, this work will begin examination of the types of contexts that give rise to essentialist thinking about social categories. Overall, this dissertation aims to contribute to theoretical work on the social-cognitive underpinnings of prejudice, as well as to future applied work which can make use of social-psychological theory to reduce prejudice and improve inter-group relations.

References

Allport, G. (1954). *The nature of prejudice.* Cambridge, MA: Addison-Wesley.

Atran, S. (1990). Cognitive foundations of natural history: Towards an anthropology of science. Cambridge, MA: Cambridge University Press.

Cosmides, L., Tooby, J., & Kurzban, R. (2003). Perceptions of race. *Trends in Cognitive Sciences, 7,* 173-179.

Gelman, S.A. (2003). *The essential child.* New York: Oxford University Press.

Gelman, S.A., & Coley, J.D. (1990). The importance of knowing a dodo is a bird: Categories and inferences in 2-year-old children. *Developmental Psychology, 26*, 796-804.

Gelman, S. A., & Wellman, H. M. (1991). Insides and essences: Early understandings of the nonobvious. *Cognition, 23,* 183-209.

Haslam, N., & Levy, S. R. (2006). Essentialist beliefs about homosexuality: Structure and implications for prejudice. *Personality and Social Psychology Bulletin, 32*, 471-485.

Haslam, N., Rothschild, L., & Ernst, D. (2002). Are essentialist beliefs associated with prejudice? *British Journal of Social Psychology, 41*, 87-100.

Hirschfeld, L. (1996). Race in the making: Cognition, culture, and the construction of human kinds. Cambridge, MA: The MIT Press.

Jayaratne, T. E., Ybarra, O., Sheldon, J. P., Brown, T. N., Feldbaum, M., Pfeffer, C. A., Pfeffer, C.A., & Petty, E.M. (2006). White Americans' genetic lay theories of race differences and sexual orientation: Their relationship with prejudice toward blacks, and gay men and lesbians. *Group Processes & Intergroup Relations, 9*, 77-94.

Prentice, D. & Miller, D. (2007). Psychological essentialism of human categories. *Current Directions in Psychological Science*, *16*, 202-206.

Rothbart, M., & Taylor, M. (1992). Category labels and social reality: Do we view social categories as natural kinds? In G. R. Semin & F. Fiedler (Eds.), *Language, interaction, and social cognition* (pp. 11-36). Newbury Park, CA: Sage.

Taylor, M. (1996). The development of children's beliefs about social and biological aspects of gender differences. *Child Development, 67,* 1555-1571.

Yzerbyt, V., Judd, C., & Corneille, O. (2004). *The psychology of group perception: Perceived variability, entitativity, and essentialism*. New York: Psychology Press.

Chapter 2

The Relation of Genetic and Choice Theories to Prejudice

> One consequence of… categorizing is that a *belief in essence* develops. There is an inherent "Jewishness" in every Jew. The "soul of the Oriental," "Negro blood," Hitler's "Aryanism," "the peculiar genius of America," "the logical Frenchman," "the passionate Latin"—all represent a belief in essence. A mysterious mana (for good or ill) resides in a group, all members partaking thereof.
>
> - Allport (1954, pp. 173-174, original emphasis)

In describing the cognitive contributors to prejudice, Gordon Allport identified the persistent tendency to assume that the members of a category share an underlying essence (an underlying property that makes group members what they are) as one component of a prejudiced mind. In this work, Allport makes three claims about the role of essentialism in categorization and prejudice. First, he suggests that categorizing can automatically give rise to essentialist beliefs. Secondly, he suggests that some people are more likely to view categories in essentialist terms than others, and that individual differences in essentialism will hold across different types of categories (e.g., that a person who holds an essentialist view of gender groups will also be more likely to do so for ethnic groups, religious groups, and so on). Third, he proposes that these individual differences in essentialism relate to prejudice, with people who hold essentialist representations of social categories being more prejudiced than those who do not.

Much of Allport's writing dovetails with recent work in social, cognitive, and developmental psychology. For example, cognitive research has found that people represent some categories as having an underlying essence, which is understood as an underlying property that is shared by all category members and is responsible for the development of category-linked properties (Medin & Ortony, 1989). This view of

categories has a number of important cognitive consequences; for example, from an essentialist point of view, category identities are understood as immutable, and category-members are expected to share many properties (and to be very different from members of a different category). Essentialist beliefs appear to arise quite early in development, in the absence of any direct instruction (Gelman, 2003), thus supporting Allport's proposal that essentialism can be a fairly direct and automatic consequence of categorizing.

Recent work in social psychology has also supported the proposal that there are meaningful individual differences in the extent to which people represent social categories in an essentialist manner. Individual differences in essentialist beliefs have been linked to political conservatism (Brescoll & LaFrance, 2004; Jayaratne et al., 2006; Rhodes & Gelman, 2009), stereotyping (Bastian & Haslam, 2005), and prejudice (Keller, 2005). Several recent findings, however, suggest that both the nature of individual differences in essentialism and the relation of essentialism to prejudice may be complicated and variable, particularly across different types of social categories. Thus, the goal of the present paper was to examine the relationship between essentialist beliefs and prejudice across a wide range of categories, and in doing so, to contribute to the development of a theoretical model of how lay theories of group differences (of which essentialism is a key component) relate to prejudice.

The belief that categories have an underlying reality, or "essence", which makes category members what they are, is part of a network of related, but distinct, beliefs about categories. For example, essentialism includes the beliefs that category membership is conferred through natural processes (e.g., biological inheritance), that category-linked properties (e.g., personality traits, behaviors, achievement levels) are a direct

consequence of category membership and also result from natural (e.g., genetic) processes, that category membership is immutable across development, that members share many properties, and that categories have discrete boundaries (Atran, 1990; Gelman, 2003; Medin & Ortony, 1989). In the present work, I focused on the first two of these beliefs—that category membership and category-linked properties result through biological mechanisms.

In particular, I examined individuals' endorsement of genetic causal theories in explaining the development of category membership (e.g., in explaining why a person is gay), as well as in explaining the development of category-linked properties (e.g., in explaining the differences in achievement levels between African Americans and white people). A number of researchers have proposed that measuring endorsement of genetic theories provides a useful window into psychological essentialism (see Keller, 2005). In this context, assessing genetic theories provides a concrete way to assess the belief that category membership and category-linked properties are established through natural processes and tied to internal properties (e.g., it is more straightforward to ask whether a property is tied to genetics, than to ask whether a property is tied to an ambiguous "underlying causal property").

In general, the literature on psychological essentialism suggests that people do not need to have detailed beliefs about what an essence is or where it is located in order to represent a category in an essentialist manner. For example, young children are unlikely to know about DNA, yet they still appear to believe that categories and category-linked properties are tied to underlying properties that are conferred through natural processes. Although detailed genetic knowledge is not necessary for psychological essentialism,

there is some evidence that contemporary adult populations (in the United States) believe that category "essences" are in fact located in genes (Newman & Keil, 2008). Thus, the assessment of genetic theories is a useful way to examine an important component of psychological essentialism.

The relation of lay genetic theories to prejudice has been examined in a number of previous studies. In general, for categories based on race or sex, endorsement of genetic causal theories has been related to increased stereotyping and prejudice (as predicted by Allport). For example, in a nationally representative sample of adults in the United States, the belief that racial and ethnic differences are caused by genetics is related to increased prejudice towards Blacks (Jayaratne et al., 2006). In related work, Martin and Parker (1995) found that the belief that sex differences are caused by biological factors is related to perceptions of larger between-group differences. Also, Keller (2005) found that a general belief in genetic determinism was associated with prejudice towards Turkish immigrants in a German sample, and also to sexist attitudes. There are also several relevant experimental studies. For example, Brescoll and LaFrance (2004) found that reading about a biological explanation for sex differences led to increased gender stereotyping, and Keller (2005) found that priming genetic information led to increased racial prejudice, particularly for people who had high habitual levels of endorsement of genetic determinism.

However, this pattern of findings—in which increased endorsement of genetic theories relates to increased prejudice—does not appear to hold across all social categories. For example, there is substantial evidence that genetic theories of sexual orientation relate to *less* prejudice towards homosexuals (see Haslam & Levy, 2006).

There is also evidence that believing that obesity is *not* caused by choice (a causal belief that may assume a role of genetics) appears to relate to less prejudice towards people who are overweight (Crandall, 1994; Crocker, Major, & Steele, 1998; DeJong, 1993; Rothblum, 1992; Weiner, Perry, & Magnusson, 1988).

The variability in the relations between genetic theories and prejudice across previous reports suggests the need for a more detailed theoretical model specifying how essentialism predicts prejudice across different social categories. Prentice and Miller (2007) proposed such a model. They suggested that the relation between essentialism and prejudice depends on whether category stigma attaches to category identity itself, or to category-linked properties. They hypothesize that when stigma attaches to category membership, the belief that category membership is due to genetics relates to decreased prejudice. In contrast, they hypothesized that when stigma attaches to properties associated with category membership, belief that those properties are caused by genetics relates to increased prejudice. Each of these hypotheses will be discussed in turn.

One important implication of genetic theories is that believing that a category identity is caused by one's genes indicates that such identities are *uncontrollable.* A number of studies have shown that viewing stigmatized identities as caused by uncontrollable factors relates to less prejudice (Crandall & Martinez, 1996; Weiner, Perry, & Magnusson, 1988). This relationship is thought to occur because people recognize that it is unfair to be biased against people for characteristics that are out of their control. In contrast, believing that a stigmatized identity is caused by controllable factors (e.g., choice), relates to increased prejudice because people view group members as responsible for their own stigmatization. Thus, for categories for which individuals

are stigmatized for being members, increased endorsement of genetic theories should relate to less prejudice.

For example, for the category *homosexuals*, and also for categories based on weight, stigma attaches to category identity itself. Thus, believing that people are gay, for example, because of their genetics, leads to the belief that it is unfair to be biased against gay people. In contrast, the belief that sexual identity is a matter of choice, not influenced by genetics, leads to the belief that gay people are responsible for their own identity category, or in other words, that gay people are responsible for their own stigmatization.

In contrast, Prentice and Miller (2007) propose that for categories where stigma attaches not to category identity itself, but to associated properties (e.g., differences in personality, achievement, crime, etc.), genetic theories should lead to increased prejudice. For these categories, genetic theories may serve to make the development of category-associated stigmatized properties (e.g., lower achievement levels) appear to be natural and unpreventable consequences of category membership. These categories include those based on race and ethnicity. For example, if individuals have a highly essentialist view of racial categories, then they may assume that negative correlates of group membership (e.g., higher crime rate among African Americans) are natural consequences of group membership. This belief system discounts social contributors to these properties, for example, the effects of history or social policies. Further, genetic theories may foster beliefs that these category-associated patterns are inevitable, will hold across all members of the category, and are indicative of underlying biological differences in potential, thus facilitating biased attitudes and behaviors. The belief that property differences between

categories are caused by genes may also relate to the belief that such categories are fundamentally-distinct, discrete kinds, which has also been related to increased prejudice (Haslam & Levy, 2006).

As noted by Prentice and Miller (2007), this model can account for much of the existing data on essentialism and prejudice, but remains speculative because it has not been systematically evaluated. In previous work, the relations between essentialism and prejudice for different categories have often been examined in separate studies, using widely different measures of essentialism and prejudice. Also, a fairly narrow range of categories has been tested. If the model described by Prentice and Miller is accurate, then we should be able to predict how essentialism relates to prejudice for categories beyond those that have been previously studied. Thus, in the present work, I measured genetic theories and prejudice for a much wider range of social categories, using the same measures across the categories.

Within the model proposed by Prentice and Miller, a key reason why essentialist beliefs mitigate prejudice towards certain groups (e.g., for categories based on sexuality or weight) is that explanatory theories that focus on natural factors (e.g., genetics) indicate that membership is uncontrollable, or in other words, is not dependent on *choice*. This proposal fits nicely with work on controllability, which has indicated increased bias towards stigmatized groups for which the category membership is understood as controllable (Crandall & Eshleman, 2003; Crandall & Martinez, 1996; Weiner, Perry, & Magnusson, 1988). One implicit assumption in this framework, however, is that endorsement of causal theories emphasizing genetics will be inversely related to those emphasizing choice. Although this seems intuitively rational, theories focusing on the

role of genetics and on the role of choice have rarely been considered within the same study. In one exception, Jayaratne and colleagues (2009) examined endorsement of genetic and causal theories for a range of human characteristics, which included sexual orientation but otherwise focused on individual traits (e.g., math ability, general intelligence). Jayaratne et al. found that endorsements of genetic and choice theories were inversely related, but that this relationship was generally weak. The only characteristic for which a strong inverse relationship was found (i.e., a correlation above .40) was sexual orientation. To examine the relationship between choice and genetics more thoroughly, in the current work, I assessed endorsement of both types of theories across a wide range of social categories.

Overview of Studies

This work requires a common scale that can measure prejudice across a large number of groups. However, I was unable to find such a common scale. Thus, the goal of Study 1 was to develop a scale that can be used to measure out-group prejudice using the same items for many different social categories. In Study 1, I began to evaluate the validity and reliably of this newly developed prejudice scale, for 10 social categories. In Study 2, I used this prejudice scale to test hypotheses derived from the Prentice and Miller (2007) model regarding the relation between genetic theories, choice theories, and prejudice.

Study 1

The primary goal of Study 1 was to develop and validate a prejudice scale that can be used across a wide range of social categories, which could then be used to test the relations between lay causal theories and prejudice in Study 2. I surveyed the literature on

prejudice scales to identify possible items for a new scale. Two single-item general questions seemed especially promising. One was the feeling thermometer introduced in the 1964 American National Election Study, from which three items were created ("I feel positively / negatively / warmly toward X."), items 1-3 in Table 2.1. Second was Bogardus' (1926) social-distance scale, from which another three items were created ("I would be happy having an X as my best friend"; "Sometimes I feel a little uncomfortable around Xs"; "I think it is OK for someone not to hang out with a person because that person is an X"), items 4-6 in Table 2.1. An additional three items were included that measured beliefs about whether or not it is acceptable to discriminate against members of a group (e.g., "It's wrong for an employer to avoid hiring someone who is an X"), items 7-9. Three further questions were adapted from the "modern" prejudice scales, which measure prejudice by assessing the extent to which participants deny that prejudice exists (e.g., "There isn't really that much discrimination against Xs in America"), items 10-12.

To test scale validity, in addition to the newly developed scales, participants also completed previously validated category-specific measures of prejudice, and also questions about their perceptions of the magnitude of differences between groups (e.g., between African Americans and Whites).

In Study 1, participants completed items for 10 diverse social categories: gay men, lesbians, mentally ill people, fat people, Black people, Mexican Americans, rural people, and poor White people. To avoid response biases, two additional categories of people often perceived as non-stigmatized (rich Whites and Christians) were also included.

Method

Participants

Participants (N = 159; 90 female, 69 male; 21 from rural communities, 104 suburban, 30 urban, 4 other; 152 heterosexual, 1 gay, 6 other/did not specify; 116 White, 19 Asian, 12 Black, 6 Hispanic, 6 other / did not specify) were college students recruited from an introductory psychology subject pool in a university in the Midwestern United States.

Procedure

Participants completed questions on a computer during a thirty minute session. Participants completed the new prejudice scale for the following groups: Black people, poor White people, rural people, gay men, lesbians, mentally ill people, fat people, Mexican Americans, Christians, and rich White people. To assess convergent validity, participants also completed previously validated prejudice scales for four of the groups (Black people, fat people, gay men, lesbians). Participants also completed demographic information pertaining to 9 of the 10 target groups – we did not ask students about mental illness. Based on the information presented, members of groups were excluded from analyses involving that group, because we were interested in studying prejudice against out-group members. For example, the 6 self-rated overweight students were excluded only from analyses involving attitudes towards fat people. Participants also completed scales measuring their perception of the size of group differences during a different testing session (about 5-15 days prior to the day they completed the prejudice scales).

Measures

Size of inter-group differences. For each group, participants were asked one question about the perceived size of differences between the group and a comparison

group, e.g., “In terms of behaviors and life outcomes, how different are White people who are poor and White people who are well-off?” on an 11-point scale (0 = Not at all different, 10 = Extremely different).

New prejudice scale. For each group, participants were asked the 12 questions in Table 2.1 on a seven-point scale (1 = Strongly Disagree, 7 = Strongly Agree).

Modern racism scale (α = .82): Seven-item scale assessing negative attitudes towards Blacks (e.g., “Blacks are getting too demanding in their push for equal rights.”; McConahay, 1986).

Anti-fat attitudes scale (α = .85): Seven-item dislike sub-scale of Crandall’s (1994) anti-fat attitudes scale assessing negative attitudes towards fat people (e.g., “I really don't like fat people much”).

Attitudes toward gays and lesbians (αs = .94, .92): Two 10-item scales assessing negative attitudes towards gay men and lesbians (“I think male homosexuals are disgusting.” “Female homosexuality is a sin”; Herek, 1988).

Results and Discussion

Prejudice Scale

Exploratory factor analyses indicated that the 3 items assessing belief that discrimination is not a problem formed a distinct factor that for most groups was uncorrelated with the other items (see below). Without rotation, the remaining nine items generally loaded onto one factor for each group; with rotation, generally items 1-5 loaded onto one factor and items 8 and 9 loaded onto a second factor; item 6 loaded on both factors. Item-level correlations with the validated prejudice scales indicated that with one exception (item 7 with Modern racism scale), every item correlated significantly (|*r*|s =

.22-.74, *p*s < .01) with the validated scales. Based on the results of the factor analysis and item-level analyses, I removed the three items assessing beliefs that discrimination is not a problem, and created a nine-item prejudice scale for each group. The scale had high internal-consistency reliability for each group (α = .74 for rich Whites; other αs > .80), and the scales for each relevant group were strongly related to the validated scales: Blacks, r = .48, p < .001, gay men, r = .76, lesbians, r = .75, fat people, r = .69, *p*s < .001. These results provide initial support for the validity of a nine-item prejudice scale. The somewhat smaller correlation for the category *Blacks* is not surprising, given that the Modern racism scale (the validated scale that assesses anti-black prejudice) is not a pure measure of out-group bias (see below); instead, this measure focuses on the belief that discrimination is not a problem.

Although the 9-item scale had good internal reliability and correlated with the validated scales, a primary goal of the study was to create a short scale to ease administration for assessing attitudes towards a fairly large number of groups (i.e., a scale with fewer items would result in shorter testing sessions and less participant fatigue). Thus, I explored a four item scale composed of two items adapted from the feeling thermometer ("I feel positively toward [fat] people."; "I feel negatively toward [fat] people.") and two items adapted from the social distance scale ("I would be happy having a [fat] person as my best friend."; "Sometimes I feel a little uncomfortable around [fat] people."). This set of items was chosen because of their syntactic simplicity, and because they created a scale that contained equal numbers of positive/negative items. Also, these items appear to have the highest face validity, in that they directly assess out-group bias. This scale was internally reliable for every group (αs = .76 - .90). The correlations with

validated scales were high (Blacks, $r = .41$, $p < .001$, gay men, $r = .76$, lesbians, $r = .62$, fat, $r = .72$, ps $< .001$) – nearly identical to the correlations of the nine-item scales with the validated scales. As further evidence of scale validity, prejudice scores, as indicated by the four-item scales, were positively correlated with beliefs about the size of inter-group differences, see Table 2.2. Also, political conservatism was significantly positively correlated with prejudice toward gay men and lesbians, ps $< .001$, and significantly negatively correlated with prejudice toward rural people and rich Whites, ps $< .05$, see Table 2.2.

Descriptive statistics for the prejudice scale are presented in Table 2.2. The mean response was to 'disagree' with negative statements for rural people, Blacks, and Mexican Americans and to 'somewhat disagree' with negative statements for all other groups. As indicated by graphical and numerical summaries, responses were relatively normally distributed (e.g., all skews < .85, kurtoses < .6). For comparison, there was evidence of mild non-normality for the Modern racism scale (skew = 1.46, kurtosis = 3.86) and Attitudes towards lesbians scale (skew = 1.10, kurtosis = 1.16) but not for the Attitudes towards gay men scale (skew = .88, kurtosis = .30), or the anti-fat scale (skew = .36, kurtosis = -.42).

Belief that Discrimination is Not a Problem

Because assessing bias with questions that ask whether discrimination is a problem in society has been a common approach in recent work on prejudice (e.g., this approach is the basis of the Modern racism scale), I explored the properties of these items (although, as described above, they were not included in the final prejudice scale used in Study 2). For each group, three-item scales were created assessing belief that

discrimination is not a problem. The scale was internally reliable for each group, αs > .70. There was substantial variability in beliefs about the prevalence of discrimination by group. The mean response was to 'agree' that discrimination is not really a problem for Christians and rich Whites and to 'somewhat agree' for rural people. The mean response was to 'disagree' that discrimination is not a problem for gay men, Blacks, and Mexican Americans and 'somewhat disagree' for mentally ill, lesbians, fat, and poor Whites.

The relation between belief that discrimination is not a problem for each group and the new prejudice scale was significantly positive only for beliefs about gay men, $r(152) = .35$, $p < .001$, and marginally for lesbians, $r(150) = .15$, $p = .07$. These relationships were not significantly different from the correlations between belief that discrimination is not a problem and the validated scales (ATG, $r(152) = .35$, $p < .001$; ATL, $r(150) = .23$, $p = .006$), ps > .5. There was a significant negative relationship for beliefs about rural people, $r(133) = -.19$, $p = .03$. For all other groups, there was no significant relationship, $|r|$s < .12, ps > .19. Belief that discrimination is not a problem was marginally correlated with Crandall's (1994) anti-fat scale, $r(153) = .14$, $p = .09$, but this correlation was not significantly different from the correlation with the new prejudice scale, $r(153) = .08$, $p = .3$.

Belief that discrimination is not a problem for Blacks was significantly correlated with the Modern racism scale, $r(139) = .39$, $p < .001$, and this correlation was significantly greater than the correlation with the new prejudice scale, $r(139) = .04$, $p = .69$. This correlation is to be expected, as the items assessing belief that discrimination does not exist were adapted from the Modern racism scale. Belief that discrimination is not a problem has been suggested as a less obtrusive way to assess prejudice (e.g.,

Modern sexism scale), but the current results suggest that for a number of groups, the relation between believing the discrimination is not a problem and negative out-group bias is orthogonal. These findings indicate that scales measuring whether people believe that discrimination exists do not directly reflect their feelings of bias; instead, such scales may tap a distinct component of out-group attitudes.

Study 2

Study 1 resulted in a four-item scale to assess prejudice across a wide-range of social categories. In Study 2, I used this scale to assess the relations between genetic theories, choice theories, and prejudice across 15 social categories. Categories were selected to represent a range in terms of how much stigma attaches to category membership itself (vs. associated properties). Based on existing research, we expected several categories to be relatively high in stigma attaching to category identity: fat, gay male, and lesbian. For categories for which stigma strongly attaches to category membership, according to the Prentice and Miller model, more endorsement of genetic explanations of category membership should relate to less prejudice, and conversely, more endorsement of choice-based explanations should relate to more prejudice. We also expected stigma to attach less strongly to category membership itself, and instead to attach more strongly to category-linked properties for categories based on race-ethnicity and location: Black, Mexican American, Arab American, Palestinian, Southern, and rural. For categories that have less stigma attached to membership itself, and more stigma attached to associated properties, more endorsement of genetic explanations for category-linked properties (e.g., category-based differences in achievement) should relate to more prejudice. We also included the following additional groups: alcoholic, evangelical

Christian, criminal, schizophrenic, poor White, and female CEO. This sample of categories was selected because they intuitively seemed to vary in the extent to which stigma attaches to identity itself. For each of the 15 categories, participants were asked to rate how much they believe that prejudice exists towards the category because people believe that being a member of that category is inherently wrong. Increased endorsement of beliefs that prejudice exists because being a member of the category is viewed as inherently wrong should indicate that stigma strongly attaches to category membership itself.

For each category, participants rated their endorsement of genetic theories to explain category membership itself (e.g., how much do genetics determine whether someone is an alcoholic?), and to explain two types of category-linked properties. These related to personality (e.g., how much do genetics cause the differences in personality between people who are alcoholics and people who are not alcoholics?), and to achievement (e.g., how much do genetics determine the differences in career/educational attainment levels between people who are alcoholics and people who are not alcoholics?). For each category, participants also rated their endorsement of the extent to which membership is due to choice. For the categories for which stigma attaches more strongly to identity (e.g., being an alcoholic), the questions related to genetic and choice-based theories of *category membership* should be predictive of prejudice, whereas for the categories for which stigma attaches more strongly to associated properties (e.g., being Mexican American), the questions related to genetic theories of *associated properties* should be predictive of prejudice.

As described above, in order to provide direct evidence that the categories varied as expected in terms of the extent to which stigma attaches to identity vs. associated properties, participants also completed an item asking about the extent to which prejudice towards a category exists because membership in that category is believed to be "inherently wrong" (where increased ratings that membership is believed to be "inherently wrong" is expected to indicate that stigma attaches more strongly to category membership). Thus, as "inherently wrong" ratings increase, a positive correlation between endorsement of choice theories and prejudice should increase in magnitude, as should a negative correlation between genetic theories of category membership and prejudice. Alternately, as "inherently wrong" ratings decrease (e.g., for categories where stigma attaches to associated properties), positive correlations between endorsement of genetic theories of associated properties (personality and achievement) and prejudice should increase.

Method

Participants

Participants (N = 186; 115 female, 68 male, 3 did not specify; 23 from rural communities, 120 from suburban communities, 29 from urban communities, 14 other / did not specify; 2 gay, 177 heterosexual, 2 bisexual, 5 did not specify; 132 White, 32 Asian, 9 Black, 5 Hispanic, 8 did not specify; 34 Jewish, 45 agnostic/Atheist, 7 Hindu, 3 Islam, 3 spiritual, 32 Catholic, 58 Protestant Christian; 16 Christians indicated they were evangelical; 86 Democrat, 35 moderate/independent, 26 Republicans, 7 did not specify; 14 overweight, 149 average weight, 16 underweight) were college students (22 freshmen, 33 sophomores, 33 juniors, 65 seniors, 10 graduate students) and community members (N

= 15) of a city in the Midwestern United States. Participants were recruited from campus locations and nearby coffee shops, and received a five-dollar gift card for participating.

Procedure

Participants completed questions on paper by themselves; response time varied from 8-20 minutes. Participants completed questions about the size of group differences, beliefs about choice and genetic causes, beliefs about the cause of prejudice, and the new prejudice scale for the following groups: Black people, poor White people, rural people, gay men, lesbians, mentally ill people, fat people, Mexican Americans, evangelical Christians, Arab Americans, Palestinians, schizophrenics, alcoholics, Southerners, female CEOs, and criminals. Participants also completed demographic information as in Study 1. As in Study 1, when information was available, members of a target group were excluded from analyses involving attitudes about their own group. (We did not ask about mental illness, criminality, or alcoholism). For example, 14 students who rated themselves as overweight were excluded from analyses involving beliefs about fat people; 90 students who identified as Christian or Catholic were excluded from analyses involving beliefs about evangelical Christians (for the group *evangelical Christians*, participants who identified themselves as either Christian or Catholic had prejudice scores that were one standard deviation lower than the rest of the population, indicating that members of both of these categories may have viewed evangelical Christians as less of an out-group than did other participants).

Measures

Size of inter-group differences. Participants were asked one question about the perceived size of career/educational achievement differences and one question about

personality differences between the group and a comparison group, e.g., "How big are the differences in career/educational attainment [personality] between [criminals] and [non-criminals]?" Responses were on a seven-point scale: No Differences, Very small, Small, Small-to-moderate, Moderate-to-large, Large, Very large.

Genetics. To assess belief that genetics cause category membership, participants were asked: "How much do genetics determine whether someone is [a criminal]?" To assess belief that genetics cause group properties, directly following each question about the size of group differences, participants were asked "How much do genetics cause these differences in career/educational attainment?" and "... differences in personality?" When participants indicated that there were no group differences, the corresponding genetic question was coded as missing. Responses were on a 7-point scale: Not at all, Slightly, Somewhat, Moderate amount, A lot, Mostly, Completely.

Choice. For each group, participants were asked: "How much choice is involved in being [a criminal]?" Responses were on a seven-point scale: None, Very small, Small, Small-to-moderate, Moderate-to-large, Large, Very large.

Inherently wrong. For each group, participants were asked "For people who are prejudiced against [criminals], how much do you think this prejudice is because they think there is something intrinsically wrong, bad, or immoral about being [a criminal]?" Responses were on a seven-point scale: Not at all, A little, Somewhat, A moderate amount, A lot, Mostly, Completely.

New prejudice scale. Participants were asked the 4 item prejudice scale developed in Study 1 with one small change – the word 'somewhat' was added to one item: "I feel somewhat negatively toward [criminals]." to avoid floor effects.

The exact same prejudice scale was used across categories, with the exception of female CEOs. This category differs from the other groups in that female CEOs, although stigmatized (Lee & James, 2007), also have relatively high status. For this reason, the two items related to having associations with female CEOs ("I would be happy to have a female CEO as my best friend," "Sometimes I feel a little uncomfortable around female CEOs") may not tap prejudice, instead people may focus on the status benefits of being associated with female CEOs when answering these questions. Therefore, for this category only, these two items were replaced with the following items: "I feel warmly towards female CEOs" and "I think female CEOs are generally unpleasant people."

Order of Questions

The first section contained questions about group differences and beliefs about genetics blocked by group. Within each block, the order was: belief that genetics causes category membership, size of career/education differences, belief that genetics causes career/education differences, size of personality differences, belief that genetics cause personality differences. After the first section came questions about choice, prejudice, inherence, and demographics. For each participant, the groups were in the same order for every type of question. There were five different random orders of groups.

Results and Discussion

The prejudice scale had high internal reliability for every group, αs = .75 – .89. Mean responses ranged from slightly disagreeing (for most groups) to agreeing (for criminals). Prejudice was also high for alcoholics (mean = 'slightly agree') as well as evangelical Christians and schizophrenics (mean = 'neither agree nor disagree'). Descriptive statistics are presented in Table 2.3.

Do the Implications of Lay Theories for Prejudice Vary by How Much Stigma Attaches to Category Membership?

To address whether the implications for prejudice of genetic and choice theories vary by how much stigma attaches to category membership itself (as opposed to attaching to category-linked properties), I examined whether the relation of lay theories to prejudice varied by how much people viewed stigma as attaching to a category *because* category membership itself is viewed as inherently wrong. In general, the 15 categories varied as expected in terms of how much participants viewed prejudice as existing because category membership is thought to be inherently wrong (see Table 2.3). The categories that received the highest rating on this item were gay men and criminals, followed by lesbians and alcoholics. Categories that received lower ratings on this item (an indication that less stigma attaches to category membership itself and perhaps that instead stigma attaches to associated properties) included southerners, female CEOs, and rural people. A number of groups fell in the middle of the range, including Palestinians, evangelical Christians, Arab Americans, Blacks, fat people, schizophrenics, Mexican Americans, and poor Whites.

To test the central hypotheses, I examined how these "inherently wrong" ratings related to the correlation between endorsement of each lay theory and prejudice. These analyses were conducted separately for each lay theory: choice theories of category membership, genetic theories of category membership, genetic theories of achievement differences, and genetic theories of personality differences. For each lay theory, after examining whether the relation between endorsement of the theory and prejudice varies

by the mean inherently-wrong ratings for the 15 categories, I examined whether endorsement of the theory related to prejudice for each individual category.

Choice Theories. One key hypothesis was that the implications for prejudice of believing that category membership is determined by choice would vary depending on how much stigma attaches to category membership itself. To test this hypothesis, I examined whether the correlation between endorsing choice and prejudice was associated with the how much the categories were viewed as stigmatized because membership is believed to be inherently wrong. Indeed, this analysis demonstrated that the more that prejudice against a group is perceived as due to there being something inherently wrong with the group, the larger the correlation between prejudice and endorsement of choice theories of category membership, $r(13) = .73$, $p = .002$, see Figure 2.1. This pattern is consistent with the proposal that choice theories relate to increased prejudice for groups for which stigma is viewed as strongly attaching to category membership itself. I also examined how endorsement of choice theories related to prejudice for each category, see Table 2.4. Believing that people choose to be a group member was significantly positively correlated with prejudice for the three categories rated highest on the "inherently wrong" item: gay men ($r = .43$), lesbians ($r = .34$), and criminals ($r = .20$), as well as for schizophrenics ($r = .26$), evangelical Christians ($r = .23$), and poor Whites ($r = .22$).

Genetic Theories of Category Membership. A second key hypothesis was that the relationship between endorsement of genetic theories of category membership and prejudice would also vary by the extent to which people believe that a category is stigmatized because category membership is viewed as inherently wrong. In this case,

endorsement of genetic theories of category membership should relate to *less* prejudice, but this relationship should hold more strongly for categories that receive higher ratings on the "inherently wrong" item. To test this hypothesis, I examined whether the correlation between endorsement of genetic theories and prejudice was associated with the ratings of whether categories are stigmatized because membership is viewed as inherently wrong. This analysis revealed only a marginal association between the "inherently wrong" ratings and the correlation between endorsement of genetic theories and prejudice, $r(13) = -.44$, $p = .10$. Also, this marginal correlation was driven entirely by the ratings for gay men and lesbians; removing these groups drops the correlation to near-zero, $r(11) = -.02$, $p > .9$. I also examined how endorsement of genetic theories of category membership related to prejudice for individual categories. Endorsement of genetic theories related to less prejudice only for gay men ($r = -.18$), and marginally for lesbians ($r = -.14$), two categories that also received high ratings on the "inherently wrong" item. In contrast, believing that genetics cause category membership was positively correlated with prejudice for poor Whites ($r = .21$), female CEOs ($r = .21$), and schizophrenics ($r = .20$), all categories that were rated in the lower half on the "inherently wrong" item.

Genetic Theories of Achievement Differences. A third key hypothesis was that the implications for prejudice of endorsing genetic theories of category-linked properties would vary by the extent to which category membership is viewed as inherently wrong. In this case, *lower* ratings that people believe that a category is stigmatized because category membership is perceived to be inherently wrong (an indication that stigma attaches not to identity but to associated properties) should be associated with a larger

correlation between endorsement of genetic theories and prejudice. Indeed, correlations between belief that genetics cause career/education differences and prejudice were significantly negatively associated with group ratings for believing that prejudice against groups exists because people perceive that there is something inherently bad about being a group member, $r(13) = -.81$, $p < .001$, see Figure 2.2. This means that the more that people believe prejudice is due to something other than an inherent immorality associated with group membership (e.g., associated properties), the higher the correlation between believing that genetics causes achievement differences and prejudice. This correlation was robust ($p \leq .002$) to removal of any group. I also examined how endorsement of genetic theories of achievement differences related to prejudice for individual categories. Beliefs that genetics cause career/educational differences related significantly to more prejudice for poor Whites ($r = .26$), female CEOs ($r = .25$), Blacks ($r = .23$), schizophrenics ($r = .23$), rural people ($r = .19$), Mexican Americans ($r = .16$), all categories rated below the mean in terms of how much stigma is viewed as attached to category membership itself. The relationship was also marginally significant for Arab Americans ($r = .15$) and Palestinians ($r = .14$).

Genetic Theories of Personality Differences. I conducted parallel analyses examining how the implications for prejudice of endorsing genetic theories of personality varied by the extent to which stigma was viewed as occurring because category membership is perceived as inherently wrong. Counter to hypotheses, there was no significant relation between genetic theories about personality differences and inherently-wrong ratings, $r(13) = -.29$, $p = .29$, see Figure 2.4. However, examining the correlation between endorsement of genetic theories of personality differences and prejudice for

individual categories revealed that genetic theories of personality related to increased prejudice for a number of categories, including for Blacks (r = .28), female CEOs (r = .21), schizophrenics (r = .19), and Arab Americans (r = .19) - all groups that were rated below the mean in terms of how much prejudice is due to there being something inherently wrong with being a group member. This is qualitatively in line with the hypothesis that believing that associated properties are due to genetics will be related to prejudice for groups for which stigma attaches to associated properties.

Does Variation in Prejudice Account for How the Implications for Prejudice of Lay theories Varies by Inherently-Wrong Ratings?

It is possible that a third variable causing the above relationships is mean ratings of prejudice. Indeed, we find that group prejudice ratings are positively correlated with group inherently-bad ratings, $r(13) = .56$, $p = .03$, see Figure 2. 5. However, partial correlations controlling for the effect of mean prejudice ratings preserves the relations described above with mean inherently-bad ratings: genetics cause category membership and prejudice, $r(12) = -.70$, $p = .006$, choice and prejudice, $r(12) = .69$, $p = .006$, and genetics cause achievement differences and prejudice, $r(12) = -.72$, $p = .003$.

How do Genetic and Choice Theories of Category Membership Relate to Each Other?

A secondary research question involved the relations between endorsement of choice theories of category membership and endorsement of genetic theories of category membership. For ratings of the contribution of genetics to category membership, the mean response was ‘slightly’ for criminals, female CEOs, poor Whites, Southerners, evangelicals, and rural people, ‘somewhat’ for gay men and lesbians, ‘moderate’ for Arab

Americans, Mexican Americans, Palestinians, fat people, and alcoholics, 'a lot' for schizophrenics, and 'mostly' for Blacks.

Ratings of the amount of choice involved in being a category member were in roughly the opposite order. For choice, the mean response was 'none' for Blacks, 'very small' for Arab Americans, Palestinians, Mexican Americans, and schizophrenics, 'small' for lesbians, gay men, and Southerners, 'small-to-moderate' for fat, rural, and poor White, 'moderate-to-large' for evangelical Christians and alcoholics, and 'large' for criminals and female CEOs. For the 15 categories, there was a strong negative correlation between mean endorsement of choice and mean belief that genetics cause identity, $r(13) = -.73$, $p = .002$.

However, at the individual level, for most categories, beliefs about choice were relatively weakly related to beliefs that genetics cause identity – statistically significant for alcoholics ($r = -.27$), Palestinians, ($r = -.24$), fat people ($r = -.21$), Arab Americans ($r = -.18$), Blacks ($r = -.18$), and Mexican Americans, ($r = -.18$); marginally significant for evangelical Christians ($r = -.17$), criminals ($r = -.14$), schizophrenics ($r = -.13$) and female CEOs, ($r = -.13$). They were not significantly related for rural, ($r = -.12$), Southerners, ($r = -.09$), or poor Whites, ($r = .03$). However, belief that people choose their sexuality was strongly related to the belief that genes determine identity (gay men, $r = -.47$; lesbians, $r = -.46$).

Correlations between belief that genetics cause category membership and prejudice were not correlated with correlations between belief that there is a choice in category membership and prejudice, $r(13) = -.35$, $p = .2$. The relation of choice with prejudice and the relation of belief that genetics cause identity with prejudice had

significant effects in the opposite direction only for gay men, and marginally for lesbians. Notably for poor Whites and schizophrenics, belief in choice related significantly positively to prejudice as did belief that genetics cause category membership. To explore this further, for these two groups, I conducted regression analyses with the mean-centered choice and genetics variables and their interaction as predictors and prejudice as the dependent variable. For prejudice against schizophrenics and poor Whites, choice (B = 0.45, $p < .001$; B = 0.19, $p = .004$) and genetics (B = 0.19, $p < .001$; B = 0.26, $p = .004$) related positively to prejudice, but these relations were qualified by a marginally significant interaction term (B = 0.13, $p = .06$; B = 0.10, $p < .10$), such that high belief in both choice and genetics related to especially high levels of prejudice.

Other Correlates of Prejudice

I also conducted a number of other analyses examining other possible correlates of prejudice in this data-set. In particular, I examined how prejudice was related to beliefs about the size of achievement differences, the size of personality differences, as well as to political conservatism.

For ratings of the size of career/education differences between groups, mean responses ranged from 'small' for gay men, lesbians, evangelical Christians, Southerners, Arab Americans, and fat, to 'moderate-to-large' for poor Whites, criminals, female CEOs, and schizophrenics. Mean responses were 'small-to-moderate' for rural people, alcoholics, Mexican Americans, Blacks, and Palestinians. Beliefs about the size of career/education differences were positively correlated with prejudice for all groups – significantly so for alcoholics ($r = .37$), rural people ($r = .34$), Southerners ($r = .30$), schizophrenics ($r = .23$), Blacks ($r = .24$), criminals ($r = .23$), Mexican Americans ($r =$

.22), and fat people (r = .17), and marginally for evangelical Christians (r = .19), Arab Americans (r = .14), poor Whites (r = .14), and Palestinians (r = .13). The relation was not significant for two of the groups for which people perceived to have very small differences in career/educational achievement, lesbians (r = .11) and gay men (r = .05) nor for female CEOs (r = .04).

For ratings of the size of personality differences between groups, most groups had mean ratings of 'small-to-moderate'. However, mean ratings were 'small' for Mexican Americans and fat people, and 'moderate-to-large' for schizophrenics, criminals, and evangelical Christians. Beliefs about the size of personality differences were also positively correlated with prejudice for all groups – significantly for lesbians (r = .36), evangelical Christians (r = .36), schizophrenics (r = .31), rural people (r = .30), alcoholics (r = .30), Palestinians (r = .26), Southerners (r = .26), Mexican Americans (r = .25), criminals (r = .17), and gay men (r = .17), marginally for fat people (r = .13), and not significantly for poor Whites (r = .12) or female CEOs (r = .07).

Political conservatism was significantly positively correlated with prejudice against groups defined by sexuality – lesbians (r = .41) and gay men (r = .39), and race-ethnicity – Arab American (r = .25), Blacks (r = .25), and Mexican Americans (r = .20). Including a control variable for participant religion also yielded a significant positive partial correlation between conservatism and prejudice against Palestinians, r = .24, p = .001. Political conservatism was also marginally correlated with prejudice against schizophrenics (r = .15) and people who are fat (r = .13).

General Discussion

The overall pattern of findings supported the hypothesis that the relation between prejudice and endorsement of choice-based or genetic-based causal theories depends on the extent to which stigma attaches to category membership itself. This pattern was clearest for endorsement of choice-based theories. In particular, increased beliefs that prejudice exists because of beliefs that category membership is inherently wrong (an indication that stigma attaches to category membership itself) were associated with increases in the positive correlation between endorsement of choice theories and prejudice. Thus, when stigma attaches to category membership, believing that people choose to be category members is related to increased prejudice.

This pattern was less clear for endorsement of genetic theories. The expected pattern—that when stigma attaches to category membership, endorsement of genetic theories will relate to less prejudice—held only for groups based on sexuality. In particular, increased beliefs that prejudice exists because of beliefs that category membership is inherently wrong were associated with increases in the negative relationship between genetic theories and prejudice, for the groups *gay men* and *lesbians*. This relationship was not found for other categories for which stigma attaches to identity itself (e.g., the category *fat people*; although negative relationships between genetic theories and prejudice towards people who are fat have been found in prior work, Crandall, 1994). Why genetic theories are particularly important for categories based on sexuality remains an open question. One possibility is that participants have more carefully considered the implications of genetic theories of sexual orientation, due to the salience of debates about genetic contributors to homosexuality in the media (see Jayaratne et al., 2009). Thus, perhaps people who have less antigay prejudice have

explicitly adopted genetic based theories of sexual orientation (see discussion regarding possible direction of effects between lay theories and prejudice below).

We did find the expected relationship between prejudice and beliefs about the genetic basis of associated properties. In particular, as beliefs that prejudice exists because of beliefs that membership is inherently wrong decreased (a possible indication that prejudice exists because of associated properties), the correlations between endorsement of beliefs that genes cause career/educational differences and prejudice increased. One limitation of the present approach, however, is that we did not directly measure the extent to which stigma attaches to associated properties (instead, decreased beliefs that stigma attaches to inherent identity were taken as indicating that stigma attaches to associated properties). In future work, it would be useful to examine the extent to which stigma attaches to associated properties more directly. It is also important to note that the expected pattern between genetic theories of associated properties and prejudice was not found for questions about differences based on personality, perhaps because, for the majority of the groups studied, stigma attaches more strongly to achievement differences (e.g., career and education) than to personality.

The present findings for differences in achievement are consistent with the proposal that genetic theories of associated properties relate to prejudice, particularly for categories for which stigma attaches to those properties. One alternate possibility, however, is that the correlation between genetic theories of achievement differences and prejudice is larger for groups that are viewed as more inferior with respect to achievement. However, the pattern for *female CEOs*, a group which has higher achievement than the general population, does not support this alternate hypothesis. In

particular, increased endorsement of genetic explanations for the achievement of female CEOs was related to more anti female CEO prejudice, even though in this case, the performance of female CEOs is superior to the general population. Also, across categories (excluding female CEOs), ratings of the size of differences in achievement between the stigmatized groups and the comparison groups (a possible indicator of how inferior a group's achievement was believed to be), was not associated with the magnitude of the correlation between genetic theories of achievement difference and prejudice ($r(12) = .31$, $p = .29$).

Why might the relations of genetic and choice theories to prejudice vary by beliefs that prejudice exists because people believe that category membership is inherently wrong? According to Prentice and Miller (2007), as well as to previous work on controllability (Weiner et al., 1988), when category membership itself is viewed as fundamentally immoral, then believing that people choose to be group members (or that group membership is *not* determined by genetics) leads people to view category members as responsible for their own stigmatization. Thus, the responsibility for reducing stigma is viewed as resting on category members (e.g., in the decision to end category membership), not on other people (e.g., in attempts to be less prejudiced). In contrast, if people view category membership as not subject to choice (or as caused by genetics), then individuals do not view category members as responsible for their own identity category, and the responsibility to reduce stigma is on others—to attempt to reduce their levels of prejudice. This framework describes why increased endorsement of genetic theories, and decreased endorsement of choice theories, relates to prejudice for groups where stigma attaches to category membership itself. It is important to note, however,

that whereas Prentice and Miller (2007) focused most heavily on the role of genetic theories, the present work suggests that lay theories related to choice may be clearer predictors of the relevant patterns across categories.

For groups where stigma attaches more strongly to associated properties (and less strongly to category membership itself) Prentice and Miller (2007) suggest an opposite relation between endorsement of genetic theories and prejudice. For example, for the category *African Americans*, the relevant question is not whether people believe that category membership is determined by genetics (there is in fact very little variability in these beliefs), but rather, about whether people view lower achievement levels by African Americans as determined by genetics (or alternately, as determined by more malleable factors, such as context and social policies). For this category, stigma attaches less directly to *being* a category member, and more so to the properties that people view as associated with category membership. For such categories, increased beliefs that these stigmatized properties are determined by genetics indicates that such differences are inevitable, natural, and cannot be overcome, thus justifying negative out-group attitudes.

The overall pattern of findings obtained in the present studies is consistent with the framework described by Prentice and Miller; however, a number of open questions remain. Future work is needed to examine the causal implications of lay theories of group differences for prejudice. For example, whereas Prentice and Miller (2007) suggest that endorsement of genetic vs. choice theories leads to differences in prejudice, another possibility is that levels of prejudice influence endorsement of particular lay theories. Thus, individuals with high levels of prejudice may feel motivated to justify their prejudice by believing that group members are responsible for their own stigmatization

(e.g., high levels of prejudice towards people who are homosexual may motivate people to adopt choice-based theories of sexual orientation; Crandall & Eshleman, 2003). Future research should employ experimental methods to examine these various possibilities regarding direction of influence (see Hegarty & Golden, 2009). Although it is generally undesirable to experimentally increase prejudice, in some contexts this may be acceptable. For example, one could manipulate prejudice towards criminals (e.g., by presenting descriptions of particularly heinous or less heinous crimes) and subsequently test for endorsement of genetics-based or choice-based theories of criminality. Similarly, one could manipulate the salience of genetic or choice-based contributors to criminality, and test for effects on prejudice. Such experiments could speak to both causality and direction of influence.

Another key issue relates to the extent to which the relations between genetic theories and prejudice depend on variation in the extent to which stigma attaches to category membership itself or to associated properties. In the present work, I found support for this hypothesis by documenting that variability in these relations related to differences in the extent to which people believe that prejudice exists because of beliefs that membership is inherently wrong. In future work, however, it would be useful to manipulate these beliefs experimentally. For example, one could introduce novel categories, and manipulate both the nature of stigmatization (e.g., whether stigma is described as attaching to category identity itself or to category-linked properties) and the extent to which genetic factors are described, and then assess participants' perceptions of prejudice. Such experiments would further clarify how the relation of genetic theories to prejudice varies systematically across categories.

Although the distinction between stigma attaching to category membership vs. stigma attaching to category-linked properties appeared to fit well with the present findings, it is important to note that, in the present work, there were three categories (female CEOs, poor Whites, schizophrenics) for which prejudice was correlated both with belief that genetics cause category membership and with belief that genetics cause career/educational differences. A possible explanation for this finding is that for these groups, stigma attaches both to category membership and to associated properties. Indeed, stigma may attach to both category membership and associated properties for a fairly large number of categories. Because we did not assess beliefs about how much stigma attaches to associated properties, it is possible that for some of the categories included in the present work, stigma attaches strongly to both identity and to associated properties. Future work should examine this possibility by asking participants both the extent to which they think prejudice attaches to group membership (as was done in the present work), as well as the extent to which they think prejudice attaches to associated properties. Based on such studies, the model proposed by Prentice and Miller will likely have to be revised to account for categories for which stigma attaches strongly to both membership and to properties. Also, in future work, it will be useful to expand the types of lay theories that are considered (e.g., related to other uncontrollable but social forces, such as history, social policies, or early social experiences; see discussion in Jayaratne et al., 2009).

Another important issue raised by the present findings relates to the relationship between genetic theories and choice theories. In previous work on essentialism, as well as on controllability, researchers have generally implied that endorsement of these two lay

theories should be strongly inversely related (see Jayaratne et al. 2009 for a review). In the present studies, this relationship was indeed found for groups defined by sexuality; there was a strong negative relationship between beliefs that people choose category membership and belief that genetics cause category membership for both *gay men* and *lesbians*. However, there were relatively weak relations between believing that genes cause identity and believing that people choose category membership for other groups. This pattern is consistent with the findings of Jayaratne et al. 2009, who found a strong inverse relationship between endorsement of genetics and choice for sexual orientation but a relatively smaller relationship for a number of other characteristics. In the present work, there also generally were not significant relations between the correlations between choice and prejudice and the correlations between genetics and prejudice. The only groups for which the correlation between choice and prejudice and the correlation between genetics and prejudice had significant or marginal inverse relationships were *gay men* and *lesbians*. Interestingly, for the groups *poor Whites* and *schizophrenics*, there was some evidence of a multiplicative interaction, such that high levels of endorsement of both genetic-based and choice-based theories related to particularly high levels of prejudice.

These findings raise several interesting questions. First, why is the relation between endorsement of genetics and endorsement of choice less strong and consistent than expected? Secondly, why *is* the expected strong relationship found only for groups based on sexual orientation? One possibility for why the relationship between choice and genetics is less strong and consistent than expected is that there are many reasons why people could fail to endorse choice. A person might believe that membership in a

particular category (e.g., being fat) is not a choice, and instead attribute membership to genetics (as is implied in the framework described by Prentice and Miller, and in previous work on choice and controllability). However, instead, this individual could attribute membership to some other not-controllable, but not genetic, factor, such as family practices, the lack of physical education in schools, and so on. Thus, that rejection of a genetic theory does not necessarily imply endorsement of a choice theory, and vice versa, will have to be incorporated into future theoretical work. For groups based on sexuality, however, discussion about various causal theories has been a common topic throughout various forms of media, and this discussion often references the division between genetics and choice (see Jayaratne et al., 2009). Thus, exposure to these discussions may have created a strong inverse relationship between endorsement of genetics and endorsement of choice.

These studies also contribute to future work on prejudice more generally. The prejudice scale developed in Study 1 and used in Study 2 will be useful in future work examining explicit out-group bias. This scale had high internal-consistency reliability for all target groups, and had high correlations with existing validated scales for attitudes toward Blacks, gay men, lesbians, and fat people. The face validity of the scale is bolstered by its close resemblance to two widely-used questions to assess out-group attitudes – the feeling thermometer and the social distance scale. Because the scale includes only four simply-phrased questions, it may be easily used to assess attitudes towards a wide-range of groups in a short amount of time. Whereas many prejudice scales are geared specifically to one group, the current scale is applicable for assessing attitudes towards most groups.

An interesting finding related to the measurement of prejudice is that for nearly all groups (including those based on race-ethnicity), out-group bias was orthogonal to the belief that discrimination is not a problem for that group. The one exception was for beliefs about gay men: the belief that discrimination is not a problem was related to antigay prejudice. With this exception, the lack of a relation between the belief that discrimination is not a problem and feelings of out-group bias suggest that these are two distinct constructs. However, the belief that discrimination does not exist is a key component of the Modern racism scale and the Modern sexism scale, which suggests that these scales do not provide pure measures of feelings of out-group bias. In future work, care should be taken to distinguish measurement of these two constructs.

These studies also provide data relevant to questions about the relation of prejudice to political conservatism. In this work, political conservatism was related to prejudice against groups based on sexuality (gay men, lesbians) and groups based on race-ethnicity (Blacks, Mexican Americans, Palestinians, Arab Americans). Jost and colleagues (2003) proposed that political conservatism provides support for maintaining the status quo. Also, Jost et al. (2004) found that among Whites, political conservatism was found to be correlated with less favorable attitudes toward African Americans. One interesting possibility is that the groups for which prejudice was found to correlate with conservatism in the present work all threaten the status quo. Future work should examine this possibility more directly.

References

Allport, G. (1954). *The nature of prejudice.* Cambridge, MA: Addison-Wesley.

Atran, S. (1990). Cognitive foundations of natural history: Towards an anthropology of science. Cambridge, MA: Cambridge University Press.

Bastian, B. & Haslam, N. (2006). Psychological essentialism and stereotype endorsement. *Journal of Experimental Social Psychology, 42*, 228-235.

Bogardus, E. (1926). Social distance in the city. *Proceedings and Publications of the American Sociological Society*. *20*, 40-46.

Brescoll, V., & LaFrance, M. (2004). The correlates and consequences of newspaper reports of research on sex differences. *Psychological Science*, *15*, 515-520.

Crandall, C. (1994). Prejudice against fat people: Ideology and self-interest. *Journal of Personality and Social Psychology*, *66,* 882–894.

Crandall, C., & Eshleman, A. (2003). A justification-suppression of the expression and experience of prejudice. *Psychological Bulletin*, *129*, 414-446.

Crandall, C., & Martinez, R. (1996). Culture, ideology, and antifat attitudes. *Personality and Social Psychology Bulletin*, *22*, 1165-1176.

Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In Gilbert, D., Fiske, S., & Lindzey, G. (Eds.), The handbook of social psychology (4th ed., Vol. 2, pp. 504-553). New York: McGraw-Hill, 504-553.

DeJong, W. (1993). Obesity as a characterological stigma: The issue of responsibility and judgments of task performance. *Psychological Reports, 73*, 963-970.

Gelman, S.A. (2003). *The essential child.* New York: Oxford University Press.

Haslam, N., & Levy, S. R. (2006). Essentialist beliefs about homosexuality: Structure and implications for prejudice. *Personality and Social Psychology Bulletin, 32*, 471-485.

Hegarty, P. (2002). 'It's not a choice, it's the way we're built': Symbolic beliefs about sexual orientation in the US and Britain. *Journal of Community & Applied Social Psychology*, *12*, 153-166.

Hegarty, P. & Golden, A. (2008). Attributional beliefs about the controllability of stigmatized traits: Antecedents or justifications of prejudice? *Journal of Applied Social Psychology, 38*, 1023-1044.

Herek, G. (1988). Heterosexuals' attitudes toward lesbians and gay men: Correlates and gender differences. *Journal of Sex Research, 25*, 451-477.

Jayaratne, T., Gelman, S., Feldbaum, M., Sheldon, J., Petty, E., & Kardia, S. (2009). The perennial debate: Nature, nurture, or choice? Black and White Americans' explanations for individual differences. *Review of General Psychology*, *13*, 24-33.

Jayaratne, T. E., Ybarra, O., Sheldon, J. P., Brown, T. N., Feldbaum, M., Pfeffer, C. A., Pfeffer, C.A., & Petty, E.M. (2006). White Americans' genetic lay theories of race differences and sexual orientation: Their relationship with prejudice toward blacks, and gay men and lesbians. *Group Processes & Intergroup Relations, 9*, 77-94.

Jost, J., Glaser, J., Kruglanski, A., & Sulloway, F. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, *129*, 339-375.

Jost, J., Banaji, M., & Nosek, B. (2004). A decade of system justification theory: Accumulated evidence of conscious and unconscious bolstering of the status quo. *Political Psychology*, *25*, 881-920.

Keller, J. (2005). In genes we trust: The biological component of psychological essentialism and its relationship to mechanisms of motivated social cognition. *Journal of Personality and Social Psychology*, *88*, 686-702.

Lee, P. & James, E. (2007). She'-e-os: Gender effects and investor reactions to the announcements of top executive appointments. *Strategic Management Journal, 28*, 227-241.

Martin, C., & Parker, S. (1995). Folk theories about sex and race differences. *Personality and Social Psychology Bulletin*, *21*, 45-57.

Medin, D., & Ortony, A. (1989). *Psychological essentialism.* In S. Vosniadou and A. Ortony (Eds.), *Similarity and analogical reasoning* (pp. 179-195). New York, NY US: Cambridge University Press.

McConahay, J. (1986). Modern racism, ambivalence, and the modern racism scale. In Dovidio, J. & Gaertner, S. (Eds.) Prejudice, discrimination, and racism. San Diego, CA: Academic Press, 91-125.

Newman, G., & Keil, F. (2008). Where is the essence? Developmental shifts in children's beliefs about internal features. *Child Development*, *79*, 1344-1356.

Prentice, D. & Miller, D. (2007). Psychological essentialism of human categories. *Current Directions in Psychological Science*, *16*, 202-206.

Rhodes, M., & Gelman, S.A. (2009). A developmental examination of the conceptual structure of animal, artifact, and human social categories. Manuscript submitted for publication.

Rothblum, E. (1992). The stigma of women's weight: Social and economic realities. *Feminism & Psychology, 2*, 61-73.

Rydell, R., Hugenberg, K., Ray, D., & Mackie, D. (2007). Implicit theories about groups and stereotyping: The role of group entitativity. *Personality and Social Psychology Bulletin, 33*, 549-558.

Swim, J., Aikin, K., Hall, W., & Hunter, B. (1995). Sexism and racism: Old-fashioned and modern prejudices. *Journal of Personality and Social Psychology, 68,* 199-214.

Weiner, B., Perry, R., & Magnusson, J. (1988). An attributional analysis of reactions to stigmas. *Journal of Personality and Social Psychology, 55*, 738-748.

Table 2.1

Items designed to assess prejudice

1. I feel positively towards [X].
2. I feel warmly towards [X].
3. I feel negatively towards [X].
4. I would be happy having a [X] as my best friend.
5. Sometimes I feel a little uncomfortable around [X].
6. I think it is ok for someone not to hang out with someone because that person is [X].
7. It's wrong for an employer to avoid hiring someone who is [X].
8. I can imagine a situation where it might be ok for someone to discriminate against a [X].
9. For some jobs, it might be OK for an employer to prefer not to hire a [X].
10. Discrimination against [X] is not really a problem in the United States.
11. There isn't really that much discrimination against [X] in America.
12. [X] often miss out on good jobs due to discrimination.

Note. Items 1, 3, 4, and 5 form the four-item scale for Study 1. Items 10-12 form the three-item scale assessing belief that discrimination does not exist.

Table 2.2

Descriptive statistics and correlations for variables for each target group – Study 1

	Prejudice			Discrimination is not a problem		Correlations between prejudice and…		
	M	*SD*	α	*M*	*SD*	Size of Differences	Political conservatism	Discrimination is not a problem
Rural	2.29	0.69	.74	4.11	0.89	.18*	-.17*	-.19*
Mexican American	2.45	0.79	.82	2.44	0.93	--	.14	.08
Black	2.46	0.80	.82	2.40	0.89	.41***	.10	.04
Rich	2.83	0.87	.76	4.90	0.90	.26**	-.24**	-.02
Poor White	2.84	0.87	.80	3.19	0.94	.26**	.03	-.09
Gay	2.86	1.21	.88	2.35	0.77	.35***	.30***	.30***
Fat	2.99	1.05	.81	2.99	1.05	.33***	.11	.08
Christian	3.03	0.96	.83	4.92	0.87	--	-.17	-.16
Lesbian	3.07	1.11	.85	2.74	0.85	.29***	.45***	.15
Mentally ill	3.28	0.92	.80	2.72	1.00	.18*	.03	.06

Note. *** $p < .001$, ** $p < .01$, $p < .05$; '--' indicates correlations that are missing due to a computer glitch. Prejudice and "Discrimination is not a problem" scores were on a seven-point scale, with higher scores indicating more prejudice and a stronger belief that discrimination is not a problem.

Table 2.3

Descriptive statistics for variables for each target group – Study 2

	Prejudice			Inherently wrong		Genes cause identity		Choice		Career/ education differences		Personality differences		Genes cause career/ed differences		Genetics cause personality differences	
Group	*M*	*SD*	α	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Criminal	5.77	1.08	.78	5.79	1.23	2.38	1.24	5.56	1.13	5.17	1.37	4.73	1.21	2.46	1.34	2.58	1.35
Gay male	2.77	1.47	.89	5.51	1.41	3.27	1.89	2.97	1.85	2.65	1.37	3.90	1.55	2.02	1.20	2.39	1.41
Lesbian	3.01	1.45	.88	5.39	1.46	3.25	1.86	2.96	1.83	2.55	1.30	3.58	1.49	2.18	1.30	2.39	1.44
Alcoholic	5.10	1.27	.85	5.08	1.42	3.55	1.30	4.54	1.29	4.38	1.49	4.30	1.36	2.71	1.38	2.71	1.33
Palestinian	3.51	1.40	.89	4.38	1.67	4.13	2.29	1.82	1.34	3.58	1.64	3.66	1.58	2.37	1.48	2.15	1.30
Evangelical Christian	4.46	1.45	.87	4.31	1.80	1.69	1.46	5.11	1.55	2.59	1.44	4.51	1.42	1.97	1.30	1.99	1.37
Arab American	2.76	1.21	.87	4.21	1.69	4.47	2.20	1.83	1.22	3.41	1.36	3.51	1.31	2.40	1.47	2.24	1.31
Black	2.50	1.13	.81	4.12	1.86	5.61	1.97	1.23	0.61	4.07	1.32	3.55	1.32	2.37	1.48	2.20	1.32
Fat	3.14	1.19	.75	4.02	1.62	3.96	1.11	4.43	0.98	3.29	1.31	3.10	1.35	2.66	1.30	2.43	1.32
Schizophrenic	4.29	1.10	.77	3.83	1.89	4.72	1.43	1.50	0.82	4.81	1.48	5.29	1.33	4.06	1.53	4.21	1.68
Mexican American	2.66	1.18	.85	3.75	1.72	4.35	2.24	1.79	1.23	4.20	1.27	3.33	1.30	2.24	1.33	2.20	1.29
Poor White	3.16	1.23	.78	3.65	1.65	1.78	1.09	3.76	1.43	5.33	1.48	4.07	1.38	2.09	1.27	2.07	1.27
Southern	2.62	1.19	.86	3.17	1.73	1.71	1.34	3.28	1.79	2.75	1.42	4.01	1.25	1.89	1.18	1.90	1.30
Female CEO	2.46	0.90	.76	3.10	1.78	2.24	1.33	5.85	1.23	5.07	1.44	4.40	1.39	2.33	1.36	2.45	1.41
Rural	2.69	1.12	.82	3.03	1.78	1.46	0.85	4.00	1.67	4.46	1.22	4.36	1.09	1.73	1.09	1.95	1.24

Note. All responses were on a seven-point scale. Higher prejudice scores indicate more prejudice. Higher 'inherently wrong' ratings indicate a stronger belief that prejudice is due to the perception that there is something inherently wrong with the group. Higher 'differences' scores indicate larger perceived differences. Higher genetic/choice questions indicate belief that genes/choice play a larger role.

Table 2.4

Correlations between prejudice and key variables for each group – Study 2

Group	Size of career/ed differences	Size of personality differences	Genes cause career/ed differences	Genes cause personality differences	Choice	Genes cause identity	Political conservatism	*N*s
Criminal	.23**	.17*	.01	.07	.20**	.08	.04	175-183
Gay male	.05	.17*	.08	.06	.43***	-.18*	.39***	128-178
Lesbian	.11	.36***	.05	.08	.34***	-.14†	.41***	122-177
Alcoholic	.37***	.30***	.04	.12	.12	.10	.11	176-184
Palestinian	.13†	.26***	.14†	.12	.03	.06	.12†	150-181
Evangelical	.19†	.36***	.08	.05	.23*	.07	-.07	59-90
Arab American	.14†	.26***	.15†	.19*	.04	.14†	.25***	162-180
Black	.24**	.34***	.23**	.28***	.09	.08	.25**	159-171
Fat	.17*	.13†	.07	.07	.11	-.01	.13†	143-168
Schizophrenic	.23**	.31***	.23**	.19*	.26***	.20**	.15†	174-181
Mexican American	.22**	.25***	.16*	.08	.09	.04	.20**	160-173
Poor White	.14†	.12	.26**	.12	.22**	.21**	.07	149-157
Southern	.30***	.26***	.21*	.12	-.07	-.04	-.09	131-183
Female CEO	.04	.07	.25**	.21**	-.08	.21**	-.11	174-183
Rural	.34***	.30***	.19*	.06	-.15†	.03	-.03	146-155

Note. *** $p < .001$, ** $p < .01$, $p < .05$, † $p < .10$;

Figure 2.1

Scatterplot of Correlations Between Choice and Prejudice by "Inherently Wrong" Ratings

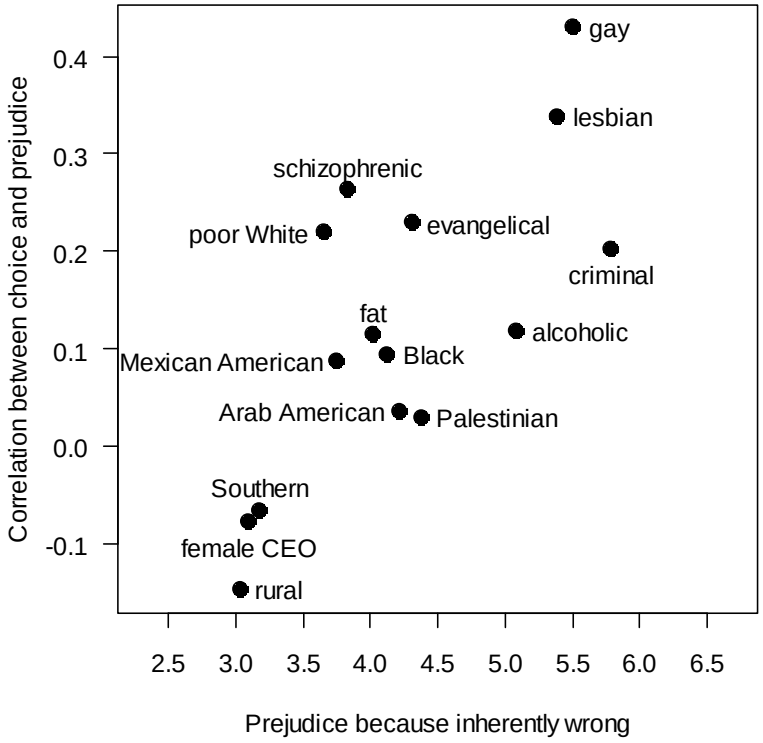


Figure 2.2

Scatterplot of Correlations Between Belief that Genes Cause Identity and Prejudice by "Inherently Wrong" Ratings

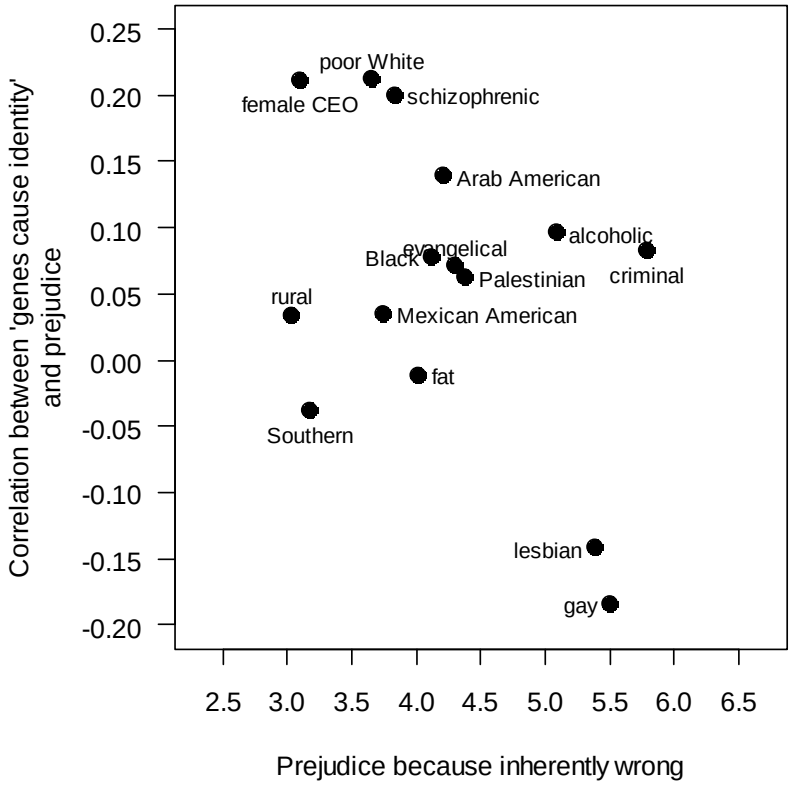


Figure 2.3

Scatterplot of Correlations Between Belief that Genes Cause Career/Education Differences and Prejudice by "Inherently Wrong" Ratings

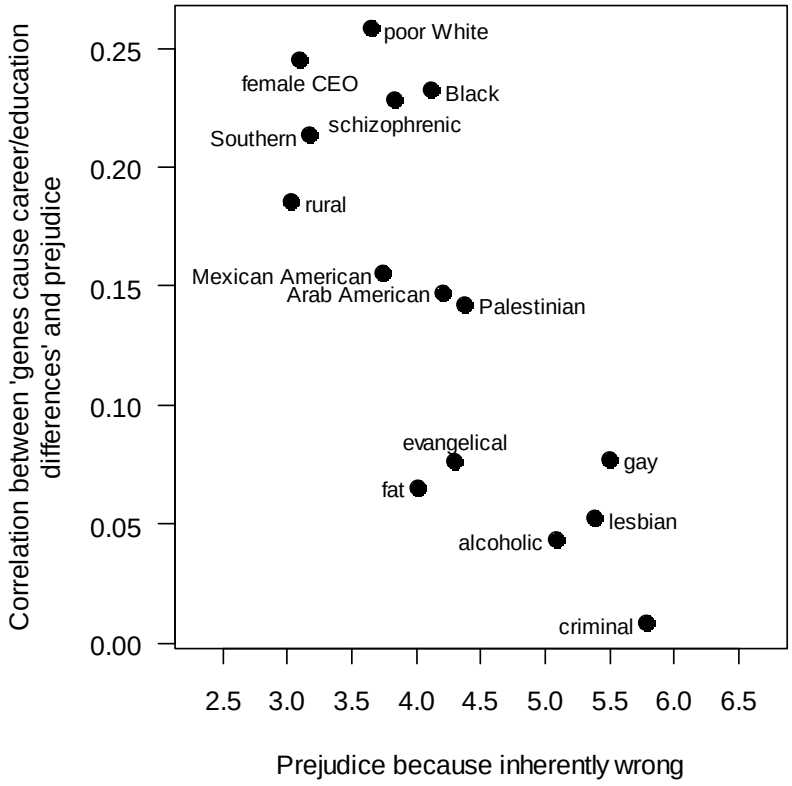


Figure 2.4

Scatterplot of Correlations Between Belief that Genes Cause Personality Differences and Prejudice by "Inherently Wrong" Ratings

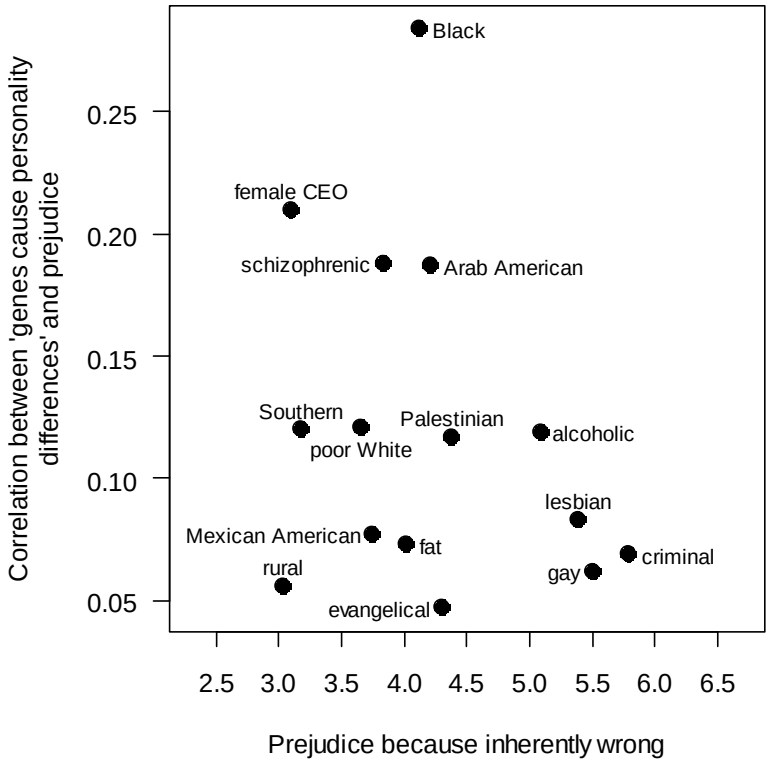
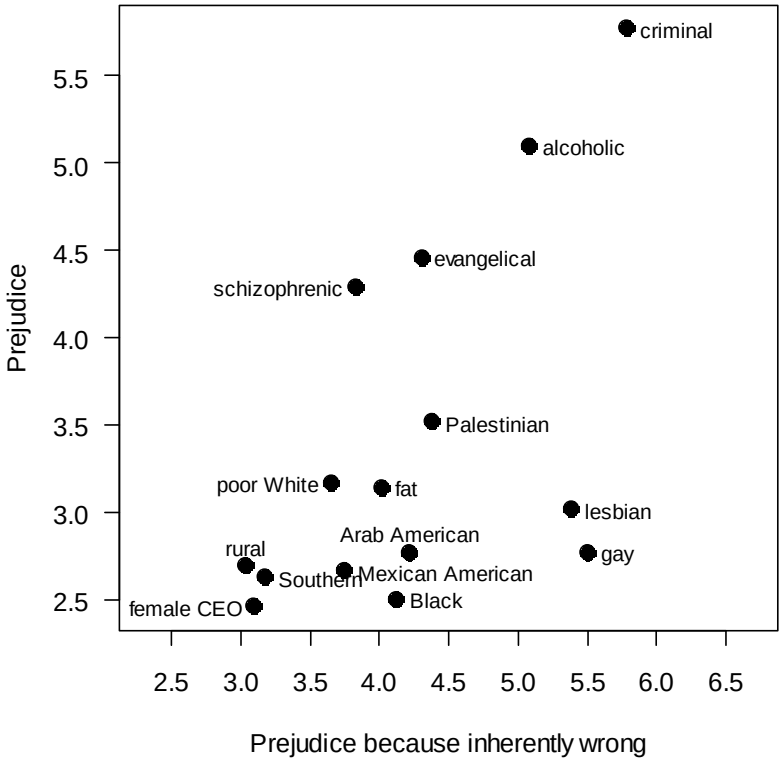


Figure 2.5

Scatterplot of Prejudice by "Inherently Wrong" Ratings



Chapter 3

The Relation of Essentialist Beliefs to Anti-gay Prejudice

Although attitudes towards lesbians and gay men in the United States have improved since the 1970s, antigay prejudice and discrimination remain common (Herek, 2000). Discrimination can be subtle, such as interpersonal discrimination during the job search process (Hebl, Foster, Mannix, & Dovidio, 2002), or blatant, such as name-calling, threats, and violence (Franklin, 2000; Parrott & Zeichner, 2005). Experiencing prejudice and discrimination has negative mental health implications for people who are homosexual (Meyer, 2003). Thus, understanding the factors that contribute to antigay prejudice has vitally important applied implications (American Psychological Association, 1999). In this paper, I present a meta-analytic review of how beliefs about the nature of homosexuality relate to antigay prejudice.

The proposal that lay theories about the nature of categories contribute to prejudice was most famously put forth by Allport (1954). In particular, Allport proposed that viewing category members as sharing essential properties that determine identity and behavior predicts increased prejudice. For example, Allport proposed that believing that Irishmen possess an inherent property that predisposes them to develop common behaviors (e.g., drinking alcohol) is related to increased anti-Irish prejudice. In recent decades, numerous studies have examined how essentialist theories (as well as anti-essentialist theories) relate to prejudice, with results suggesting complicated and multifaceted relationships. Across studies, it appears that the relationship between lay

theories and prejudice varies across different types of social categories, as well as by the specific component of essentialist thinking. To make sense of this fairly large body of work, in the present study, I used meta-analysis to examine how distinct components of lay theories of homosexuality relate to antigay prejudice.

In particular, I examined beliefs about the categorical nature of homosexuality, and beliefs about the causes of category membership. Beliefs about the categorical nature of homosexuality include whether sexual orientation is understood as having *discrete* boundaries, whether it is expected to be found *universally*, and whether it is understood as *immutable* across individual development. Beliefs about the causal origins of sexual orientation include the extent to which people view sexual orientation as determined by choice or by uncontrollable factors (e.g., genetics). In the subsequent sections, I define each of these belief systems in more detail, and describe predictions about how each belief might relate to antigay prejudice.

Beliefs about Category Structure

An influential proposal regarding the conceptual structure of categories based on sexuality is that individuals view such categories in an *essentialist* manner (Haslam & Levy, 2006). Essentialism includes the beliefs that categories have an underlying reality, which determines both category identity and the development of category-linked properties. Thus, the "essence" of a category is understood to cause similarities among group members and differences between groups.

Research in cognitive psychology has extensively examined how essentialist theories shape individuals' concepts of biological categories, such as animal species. For example, there is evidence that animal species are universally represented in an

essentialist manner (see Atran, 1990; Waxman et al., 2007). Thus, people believe that what makes an animal a member of its species (e.g., what makes a wolf a wolf) is possession of an underlying category essence (a wolf essence), which is determined through natural processes (inheritance from wolf parents), is stable across development and contexts (a wolf remains a wolf even if it is raised in a community of sheep), and causes a range of category-linked properties (having sharp teeth and a ferocious disposition; see Gelman, 2003). Further, because category identities are determined by possession of distinct essences, the boundaries between groups (e.g., between wolves and sheep) are expected to correspond to naturally-occurring distinct kinds, and to indicate a wide-array of between-group differences.

A number of researchers have suggested that, in addition to natural categories such as animal species, people also represent many social categories in an essentialist manner (Haslam, Rothschild, & Ernst, 2000; Hirschfeld, 1996; Rothbart & Taylor, 1992). For example, viewing the category *homosexuals* in an essentialist manner would include the beliefs that homosexuality is determined through natural processes (e.g., genetics), that identity is stable across development and contexts, and that the boundary between homosexuals and heterosexuals is discrete and indicative of a wide-range of between-group differences. Allport and others have proposed that representing social categories in an essentialist manner relates to increased prejudice. Specifically, essentialism is thought to increase prejudice because essentialist beliefs lead individuals to emphasize within-group homogeneity and between-group differences, and because they lead individuals to view between-group differences as inevitable and natural (Prentice & Miller, 2007).

Recent empirical work, however, has suggested that an essentialist perspective includes multiple, distinct components (Gelman, Heyman, & Legare, 2007), which may differ in their relation to prejudice (Haslam et al., 2000; Rothbart & Taylor, 1992), particularly for categories based on sexual orientation (Haslam & Levy, 2006). Haslam and Levy (2006) proposed a three-factor model for the structure of essentialist beliefs about homosexuality, differentiating among beliefs about discreteness, universality, and immutability.

Discreteness

Because a category essence is believed to be an inherent entity that has a powerful causal role in determining category membership and the development of category linked properties, categories that people believe to be based on a shared essence are thought to identify kinds that differ from each other fundamentally (Gelman, 2003). Indeed, categories based on shared essence are thought to be those that "carve nature at its joints" (Plato, Phaedrus 265d-266a). This aspect of essentialism has been termed 'discreteness' (Haslam & Levy, 2006) or 'fundamentality' (Hegarty & Pratto, 2001). Thus, discreteness beliefs indicate that category members (e.g., in the present case, homosexuals and heterosexuals) have distinct essences, and therefore, differ from each other on a wide-range of known and unknown properties. Another component of discreteness involves beliefs about the nature of category boundaries. Specifically, because essences are generally thought of as possessed in full (or not at all), partial membership is not seen as possible; the boundaries between categories are perceived as absolute (Diesendruck & Gelman, 1999; Estes, 2003; Malt, 1990; but see Kalish, 1995; 2002). Thus, emphasizing the discreteness of category boundaries suggests both that category membership is

fundamental to identity, and that the boundaries between groups are well-defined and stable.

There are a number of theoretical reasons to expect beliefs about category discreteness to predict increased prejudice. First, self-categorization and social identity theories emphasize that viewing others as members of a distinctly different social category increases negative out-group attitudes (Tajfel, 1982). Second, focusing on attributes or goals shared by one's own group and another group, increases positive attitudes towards the out-group (Hornsey & Hogg, 2000), and recognizing such similarities should be more difficult when the focus is on fundamental distinctions between groups. Therefore, beliefs that categories based on sexuality represent discrete kinds have been proposed to relate to increased anti-gay attitudes (Hegarty & Pratto, 2001), and this relationship has indeed been found empirically in a number of studies (e.g., Haslam & Levy, 2006). Overall, this pattern is consistent with Allport's proposal that representing social categories as essentialized groups relates to increased prejudice.

Universality

Another important feature of the way people think about category "essences" is that essences are generally understood to be determined through natural processes (e.g., through biological pathways). Thus, categories that are understood as corresponding to underlying essences are generally believed to be naturally occurring (Gelman, 2003; Kalish, 1998). An important consequence of the belief that essential categories are *natural* kinds is the belief that such categories should be found universally (Kalish, 1998; Malt, 1990; Rhodes & Gelman, 2009). Universality beliefs include the belief that a

particular category (in this case, categories based on sexual orientation) will be found across diverse cultural groups and throughout history.

A number of researchers have suggested that focusing on the universality of social categories reinforces the belief that classification based on these characteristics is inevitable and natural, rather than dependent on human intention or cultural convention, thus increasing the perception of between-group differences and facilitating prejudice (Hirschfeld, 1996; Rothbart & Taylor, 1992). Yet, the relationship between beliefs about universality and prejudice may also vary by the type of social category. In particular, for beliefs about homosexuality, emphasizing the naturalness of sexual orientation (i.e., the extent to which sexual orientation is conferred through processes that are outside of human control) may function to reduce the extent to which individuals are understood as responsible for belonging to the category. As described by Prentice and Miller (2007), when stigma attaches to category identity itself (e.g., individuals are stigmatized simply for being gay), believing that individuals can choose or control their identity can lead people to view category members as responsible for their own stigmatization, thus leading to increased prejudice. In this way, to the extent that beliefs about universality serve to increase beliefs that homosexuality is naturally-occurring or biologically-based, universality beliefs may lead individuals to view category membership as determined by processes that are outside of individual control. If so, then universality beliefs about homosexuality may actually relate to less antigay prejudice. Thus, different predictions may be made for universality and discreteness, indicating that how essentialism relates to prejudice critically depends on the specific component of essentialist thinking (see Haslam & Levy, 2006).

Immutability

The third component of essentialist beliefs identified by Haslam and Levy (2006) is the belief that category membership is stable over time, referred to as immutability. Because an essence is understood as an in herent property which is stable across the course of an individual's lifetime, category membership is also understood as unchangeable. In the broader literature on psychological essentialism, the belief that essential identities are immutable has received the most empirical support. For example, even very young children believe that once a baby is born either a boy or a girl (and now possesses either the "boy essence" or "girl essence") then that baby's gender will remain stable across his or her lifetime, despite changes in outward appearance, environment, or personality (Taylor, 1996). Viewing sexual orientation as an immutable category indicates a belief that one's sexual orientation will be stable across development and across changes in environment.

As with universality, the relation between immutability belief and prejudice may depend on the target group. Viewing an identity category as immutable may serve to emphasize between-group differences (e.g., immutability beliefs may be associated with beliefs about discreteness), thus leading to increased bias. Alternatively, however, immutability beliefs may also lead people to view category membership as uncontrollable. As described above, viewing individuals as responsible for their own membership in stigmatized groups has often been related to increased prejudice. Intuitively, category identities that are viewed as malleable (e.g., the category *conservative*), also seem more likely to be understood as dependent on individual control. Categories that are understood as immutable (e.g., the category *schizophrenic*), seem

likely to be understood as dependent on uncontrollable factors. Thus, to the extent that viewing sexual orientation as immutable relates to viewing homosexuality as beyond individual control, immutability may be related to decreased antigay prejudice.

Consistent with this framework, immutability beliefs have been related to less anti-gay prejudice in a number of studies (reviewed below). However, Hegarty (2002) summarizes a number of reasons to be skeptical of assuming that beliefs about immutability will consistently relate to less antigay prejudice. In addition to the possibility that beliefs about immutability may serve to emphasize between-group differences (as discussed above), Hegarty also cautions that because immutability is closely linked to biological theories of sexual orientation (e.g., to the belief that sexual orientation is determined by genes), beliefs in immutability could promote a disease model of homosexuality (see also Sheldon, Pfeffer, Jayaratne, Feldbaum, & Petty, 2007). Indeed, Hegarty found that endorsement of immutability beliefs related to less prejudice only for people who think that endorsement of immutability beliefs should be associated with increased tolerance. This pattern may indicate that immutability does not relate to less prejudice for people who can associate immutability with a disease model of homosexuality. Due to this concern, in the current study, we examine whether the negative relation between immutability beliefs and prejudice depends on the content of the belief (i.e., whether it is belief about the role of biology, choice, changeability, or fixedness at an early age).

Beliefs about the Causal Origins of Sexual Orientation

A critical reason that immutability and universality may relate to less antigay prejudice is that these beliefs are related to beliefs about the controllability of category

membership. Thus it is useful to consider lay theories about the causal determinants of category membership. Often questions about the causal origins of sexual orientation have focused on the extent to which homosexuality is perceived as caused by genetics or by choice (see Jayaratne et al., 2009).

The belief that homosexuality is caused by genetics is often linked to the belief that homosexuality is outside of individual control, and thus should relate to less prejudice, as described above (but note the disease-model caveat described by Hegarty, also reviewed above). When membership in an identity category is viewed as uncontrollable, then the responsibility to reduce stigma rests on out-group members (in attempts to reduce their own prejudice), as opposed to on the category members themselves. Alternately, believing that people choose to be homosexual may lead people to view homosexuals as responsible for their own stigmatization, thus placing the question of category membership within the moral domain (Weiner, 1993). Thus the stronger the belief that homosexuality is caused by choice, the stronger the prejudice. There is some evidence that beliefs about choice are actually a stronger predictor of prejudice than are beliefs about genetics. For example, in Brickman et al. (2009) greater belief that genetics cause membership in stigmatized groups was related to less prejudice and belief that gay people choose to be gay was related to more prejudice, but when both belief about choice and genetics were included in a regression model predicting prejudice, only choice remained significant.

As described above, beliefs about the causal origins of sexual orientation are often related to other dimensions of people's beliefs; in particular, beliefs about causal origins may be closely related to beliefs about the immutability of category membership. In fact,

measurement of beliefs about immutability and causal determinants has been conflated in that scales assessing immutability have included items that assess beliefs about whether category membership is caused by genetics or by choice (with increased endorsement of genetic determinants thought to indicate increased beliefs about immutability). However, because beliefs about immutability are at least theoretically distinct from those about particular causes (e.g., one can believe that homosexuality is changeable, in spite of a belief in a strong genetic component), in the present work, I coded measures of immutability according to whether they measure beliefs about stability only, or whether they also included measures of choice or genetic theories of category membership.

Study Overview

In this work, I used meta-analytic methods to examine the relationship between antigay prejudice and beliefs about the discreteness of categories based on sexual orientation, beliefs about the extent to which such categories are universal, and beliefs about the immutability of and role of choice in category membership. Based on the literature reviewed above, I hypothesized that there would be significant negative relationships between immutability and prejudice as well as universality and prejudice, but a significant positive relationship between discreteness and prejudice. I also explored whether the negative relation between immutability and prejudice depended on the specific component of immutability being measured as well as the correlations among the three essentialist components. Most of the studies included in this work used correlational methods. A small number of experimental studies, all focused on immutability, were also identified. There were not enough experiments with analyzable data to include in the meta-analysis, therefore, these studies will be described in the general discussion.

Method

An extensive review of the literature through March, 2008 that yielded a total of 19 articles that contained 23 relevant studies for inclusion in the meta-analysis. First, we searched *PscyhINFO* using an iterative search process. Based on preliminary searches, new search terms were added. The final search included: (gay or homosexual*) AND (essentiali* OR biologica* OR universa* OR fundamenta* OR discret* OR immutab* OR genetic OR controllab* OR choice) AND (prejudic* OR discriminat* OR toleran* OR attitud*). This search was repeated in *Sociological Abstracts*, also from 1954 to 2007. We included all correlational studies that had a measure of at least one category belief and at least one measure of attitudes towards gays. After locating articles that met these criteria from the search, we looked through their bibliographies to identify additional studies. When articles did not provide enough information to calculate an effect size, authors were contacted for the necessary information.

Each article was then coded for type of category belief, type of anti-gay attitude, characteristics of the sample (size, race, gender, age, country), effect size, date of publication, date paper was submitted, and date that data were collected. If multiple correlations were reported for the relation between a particular essentialist belief and anti-gay attitudes, these effect sizes were transformed to Fisher's *Z*-scores, averaged, and converted back to correlations. Based on this procedure, 33 effect sizes were obtained.

For the meta-analysis, correlations were transformed to Fisher Z-scores; however, for presentation in the results section, the results from the meta-analysis were back-transformed to correlations. We conducted fixed-effects meta-analysis in part because we have fewer than 10 studies for two of the analyses, and there is evidence that random-

effects models are biased for small samples (Hedges & Vevea, 1998). Also, fixed-effects models allow the extent of heterogeneity to be qualified. As indications of heterogeneity, we report the commonly-reported Cochran's Q, as well as I^2 values (Higgins & Thompson, 2002). I^2 values are an estimate of the percent of variation in effect sizes due to systematic variation; for example, an I^2 value of 40% suggests that 40% of the variability in effect sizes is due to systematic variation. Also, for each of the key analyses, we conducted several additional analyses to investigate the robustness of the findings. We tested if the effects were robust ($p < .05$) to removal of any one of the studies, and we also conducted random-effects models.

Immutability

Because measurement of beliefs about immutability and about causal determinants has often been conflated, I first examined these beliefs together. When a study included more than one specific belief, the correlations were Fisher-transformed and averaged. There were twenty-two studies involving 7094 participants that assessed essentialist beliefs about immutability, genetics, and/or choice and anti-gay attitudes, see Table 3.1 and Figure 3.1. The fixed-effects model indicated a significant negative relation between believing that homosexuality is immutable, has a biological basis, or is not a choice and anti-gay attitudes, $r_+ =$ -.37 (95% CI: -.39, -.35), $p < .001$. This effect was robust to removal of any one effect size, $p < .001$, and a random effects model yielded similar results, $r_+ =$ -.35 (95% CI: -.43, -.26), $p < .001$. Although all effects were in the same direction, they were extremely heterogeneous, $Q(21) = 336.24$, $p < .001$, $I^2 =$ 93.8%. Removing a possible outlier ($r = -.77$) did not substantively alter the results, $r_+ =$ -.32 (-.34, -.29), $p < .001$, $Q(20) = 74.52$, $p < .001$, $I^2 = 73.16\%$.

Subsequently, I coded the measures for whether they assessed beliefs about immutability alone (i.e., stability), beliefs about choice, beliefs about biological factors, or beliefs about fixity. When measures were divided by specific belief, each belief was found to relate to prejudice in the expected direction with approximately the same magnitude: not a choice -.34 (-.36, -.31), $Q(8) = 16.39$, $p = .04$, $I^2 = 51.20\%$; fixed at an early age -.23 (-.29, -.17), $Q(4) = 4.51$, $p = .34$, $I^2 = 11.39\%$; immutable -.25 (-.31, -.19), $Q(4) = 9.04$, $p = .06$, $I^2 = 55.77\%$; and due to biology: -.44 (-.47, -.41), $Q(8) = 257.81$, $p < .001$, $I^2 = 96.90\%$, see Table 3.2 and Figure 3.2. Removing an outlier ($r = -.77$) from the biological factor group dropped the estimate to -.28, (-.33, -.24), $Q(7) = 18.72$, $p < .001$, $I^2 = 62.61\%$. Random effects models yielded similar results: not a choice -.31 (-.35, -.26); fixed at an early age -23 (-.29, -.16); immutable -.28 (-.37, -.18); and due to biology -.38 (-.56, -.16). As some studies contributed to several sub-samples and some studies were not able to be included in any sub-sample, we did not conduct a significance test for whether type of belief was a significant moderator. However, as each effect size was in the medium-large range, and three sub-samples had systematic variation greater than 50%, it suggests that type of belief is not a key moderator. In summary, beliefs about genetics, immutability, and fixity related to less antigay prejudice, and endorsement of choice explanations related to more antigay prejudice. Also, there was still significant heterogeneity within most of these relations.

Universality

Five studies involving 1,073 participants included essentialist beliefs about universality and anti-gay attitudes, see Table 3.1. The fixed-effects model indicated a significant negative relation between believing that homosexuality is universal and anti-

gay attitudes, r_+ = -.25 (-.31, -.20), p < .001. These effects were not homogeneous, $Q(4)$ = 25.19, p < .001, I^2 = 84.1%. This effect was robust to removal of any one effect size, p < .001; a random-effects model indicated an effect of similar size: r_+ = -.21 (-.36, -.05), p = .01.

Discreteness

Six studies involving 1068 participants included essentialist beliefs about discreteness and anti-gay attitudes, see Table 3.1.[1] The fixed-effects model indicated a large positive relation between believing that homosexuality is discrete and anti-gay attitudes, r_+ = .44, (.39, .49), p < .001. These effects were not homogenous, $Q(5)$ = 47.11, p < .001, I^2 = 89.4%. The effect was robust to removal of any one effect size, p < .001; a random-effects model indicated an effect of equivalent size: r_+ = .44 (.26, .59), p < .001.

Relation between factors

Haslam and Levy (2006) measured immutability, discreteness, and universality across three studies. I recorded the correlations among the three factors, and computed the partial correlations controlling for prejudice.

Immutability and Discreteness. Fixed-effects meta-analyses indicated a non-significant correlation between immutability and discreteness, r_+ = .05, (-.01, .11), p > .10, but a significant partial correlation controlling for prejudice, r_+ = .27, (.21, .33), p < .001. This suggests that when you account for the opposite relation between the two essentialist beliefs and prejudice, there is a positive relation between the belief that homosexuality is immutable and the belief that homosexuals and heterosexuals are two separate, discrete categories.

Discreteness and Universality. Across the three studies reported by Haslam and Levy (2006), there was a significant negative correlation between discreteness and universality, $r_+ = -.23$, (-.29, -.16), $p < .001$, as well as a significant partial correlation controlling for prejudice, $r_+ = -.14$, (-.20, -.08), $p < .001$. Thus the more that people view the categories of homosexual and heterosexual as having discrete boundaries, the less they view homosexuality as universal.

Universality and Immutability. Across these three studies, there was a significant positive correlation between immutability and universality, $r_+ = .19$, (.13, .25), $p < .001$. The partial correlation, controlling for prejudice, was also significant, $r_+ = .11$, (.05, .17), $p < .05$. Similarly, Brickman et al. (2009) report a positive correlation between belief about genetics causing homosexuality and universality, $r = .29$, $p < .001$, which also held controlling for prejudice, $r = .24$, $p < .001$. Also consistent with these findings, Brickman et al. (2009) found a negative correlation between beliefs about choice and universality: $r = -.37$, $p < .001$, which also held controlling for prejudice, $r = -.23$, $p < .01$.

Discussion

This meta-analysis demonstrated that the relation of essentialist beliefs to antigay prejudice varies by the type of essentialist belief. In particular, belief in the discreteness of categories based on sexual orientation related to increased prejudice, whereas beliefs that homosexuality is universal and immutable related to less prejudice. Beliefs in immutability related to less prejudice regardless of whether the measures used assessed beliefs about stability alone, beliefs about genetic determinants of sexual orientation, or beliefs about the role of choice (with perceptions of less choice related to less prejudice). It is also important to note that there was a great deal of heterogeneity in the effect sizes

for each type of belief, suggesting that there are important moderators of these relationships. Identifying such moderators will be an important direction for future work.

A particularly robust finding was that endorsing choice or genetic-based explanations of sexual orientation is an important predictor of prejudice. Across studies, the present meta-analysis found that increased endorsement of choice explanations, or decreased endorsement of biological explanations, was related to more antigay prejudice. A number of studies have examined whether this relationship holds controlling for a range of other relevant variables. Endorsement of choice or genetic-based explanations relates to more antigay prejudice, even controlling for a wide-range of demographic variables, including age, gender, education (Haider-markel & Joslyn, 2008; Herek & Capitanio, 1995; Jayaratne et al., 2006), marital status (Haider-markel & Joslyn, 2008; Herek & Capitanio, 1995), income (Herek & Capitanio, 1995), and having children (Haider-markel & Joslyn, 2008). This relationship also holds controlling for political variables, including political orientation, political ideology (Haider-markel & Joslyn, 2008; Herek & Capitanio, 1995; Jayaratne et al., 2006), ethical conservatism (VanderStoep & Green, 1988), right-wing authoritarianism, and social dominance orientation (Haslam & Levy, 2006), as well as for religion-related variables, including religiosity (Haider-markel & Joslyn, 2008; Horvath & Ryan, 2003; Jayaratne et al., 2006; Raiz, 2006; Tygart, 2000; VanderStoep & Green, 1988), religious attendance (Herek & Capitanio, 1995), and type of religion (Haider-markel & Joslyn, 2008). The association between endorsement of choice or genetic-explanations and antigay prejudice also holds across variation in endorsement of traditional gender roles (Horvath & Ryan, 2003; Raiz, 2006), perceived cultural acceptance (Sakalli, 2002), authoritarianism (Raiz, 2006), and

amount of previous contact with people who are homosexual (Haider-markel & Joslyn, 2008; Herek & Capitanio, 1995; Horvath & Ryan, 2003; Raiz, 2006).

Allport described psychological essentialism as a coherent "habit of mind", suggesting that the various components of essentialism should be tightly interrelated. However, the present findings, like other recent work (see Gelman et al., 2007) suggest that essentialism is composed of a number of distinct beliefs, which relate to each other and to prejudice in a fairly complicated manner. In the present work, the correlations among the three essentialist beliefs—universality, discreteness, and immutability—were fairly small, and not consistently positive. For example, beliefs about immutability were positively correlated with beliefs about universality and beliefs about discreteness, but these correlations were relatively weak. Beliefs about universality were negatively correlated with beliefs about discreteness. Examining why this negative relationship exists is an interesting question for future work. For example, it will be important to examine whether this inverse relationship is found across different types of social categories, or whether an inverse relationship is found only when these two beliefs have distinct implications for prejudice (e.g., for categories based on race, beliefs about both universality and discreteness would be expected to relate to more prejudice—for these categories, are these two beliefs still negatively correlated?)

Another key question involves the extent to which various essentialist beliefs have independent effects on prejudice. To date, only three studies have simultaneously examined the effects of multiple essentialist beliefs on prejudice, and results have been somewhat inconsistent across studies. Brickman et al. (2009) examined the relations of endorsement of choice-explanations, genetic-explanations, and universality to antigay

prejudice. They found that when these three beliefs were entered into a model simultaneously, there were significant effects of choice-explanations (endorsement of choice predicted more antigay prejudice) and universality (endorsement of universality predicted less antigay prejudice), but there was no independent effect of endorsement of genetic causes (although there was a significant negative bivariate correlation between endorsement of genetic causes and prejudice). Somewhat inconsistent with this pattern, Haslam and Levy (2006) examined the effects of beliefs about immutability, discreteness, and universality, and found independent effects of immutability (associated with less prejudice) and discreteness (associated with more prejudice), but no effect of universality (although universality was associated with less prejudice when each belief was examined separately). Finally, Haslam et al. (2002) examined the effects of 8 essentialist beliefs on antigay prejudice. These included beliefs about discreteness, naturalness, immutability, historical stability, necessary features, uniformity, informativeness, and inherence. When all of these beliefs were examined within one model, there were significant effects of viewing categories based on sexual orientation as discrete and as informative (these beliefs were associated with more antigay prejudice), and of beliefs about the naturalness and immutability of categories based on sexual orientation (these beliefs were associated with less antigay prejudice). Given the inconsistent pattern across studies, more work in this area is clearly needed.

The present meta-analysis suggests that there are important relations between essentialist beliefs and prejudice, but pinning down this relationship more precisely will require extensive experimental work. For example, experimental studies will be necessary to determine the key direction of the effect. Often it is assumed that lay

theories contribute to prejudice (i.e., that the belief that homosexuality is explainable by individual choice causes people to be more prejudiced; see Prentice and Miller, 2007); however, it is also possible that pre-existing levels of prejudice lead people to adopt particular lay theories (Crandall & Eshleman, 2003; Hegarty & Golden, 2008). Thus, experimental studies that test for the effects of manipulating lay theories on prejudice (or that test for the effects on lay theories of manipulating prejudice) will be critical to understanding the basis of the relationships documented in the present study.

To date, there is a very limited body of relevant experimental evidence. All of these studies manipulated beliefs about the controllability or causal origins of sexual orientation. Based on the findings of the present meta-analysis, we would expect that increasing beliefs about immutability or genetic determinants, and decreasing beliefs about choice, should reduce prejudice. However, the existing experimental work presents a mixed picture. Oldham and Kasser (1999), Hegarty and Golden (2008), and Pratarelli and Donaldson (1997) used pre-test / post-test designs, in which participants completed measures of antigay attitudes, then were randomly assigned to read articles designed to prime particular belief systems about homosexuality or to control articles, and then completed another measure of antigay prejudice. In particular, Oldham and Kasser (1999) and Pratarelli and Donaldson (1997) had participants read about biological causes for homosexuality, and Hegarty and Golden (2008) presented materials designed to influence beliefs about the controllability of sexual orientation. None of these studies found an overall effect of the primes on antigay prejudice. However, Boysen and Vogel (2007) also used a pre-test / post-test method (with no control condition), and found that reading about biological causes of homosexuality decreased antigay prejudice overall

(Cohen's $d = .33$, $p < .001$; personal correspondence), although there was also evidence of biased assimilation, such that people tended to become more extreme in their initial attitudes. Similarly, in a between-subjects design, Piskur and Degelman (1992) found that reading about the genetic basis of male homosexuality related to less antigay prejudice among female participants, as compared to reading about other causes or not reading about the bases of homosexuality. Thus the findings across these five studies do not present a clear picture of the effects of priming beliefs about the controllability or causal origins of sexual orientation on antigay prejudice. More work in this area is clearly needed, however, especially given that several of these studies had fairly small samples, and also that pre-test / post-test designs may not be the most effective way to assess change in attitudes across brief periods of time (Solomon, 1949). Also, future experimental work should examine other dimensions of essentialist beliefs, such as beliefs about discreteness or universality.

The findings of this meta-analysis provide useful direction regarding the reduction of antigay prejudice. For example, they suggest that increasing beliefs about immutability and universality, as well as decreasing beliefs about discreteness, could help reduce prejudice towards people who are homosexual. In the design of such interventions, however, it is also critical to consider the relations among these beliefs. For example, although increasing beliefs about immutability may help reduce prejudice, it is also important to consider that beliefs about immutability are correlated with beliefs about discreteness (which relates to increased prejudice). Thus, interventions should attempt to increase beliefs about immutability, but must also be carefully designed to avoid increasing beliefs about discreteness. Increasing beliefs about the universality of

homosexuality may also be an effective way to reduce antigay prejudice. In fact, targeting universality may be particularly effective because not only did universality relate to less prejudice, but endorsement of universality also correlated positively with immutability (which also relates to less prejudice) and negatively with discreteness (which relates to more prejudice). Finally, these analyses suggest that there may be benefits to reducing the belief that categories based on sexual orientation have discrete boundaries.

References

*Aguero, J., Bloch, L., & Byrne, D. (1984). The relationships among sexual beliefs, attitudes, experience, and homophobia. *Journal of Homosexuality, 10*, 95-107.

Allport, G. (1954). *The nature of prejudice.* Cambridge, MA: Addison-Wesley.

American Psychological Association (1999). Archival description of counseling psychology. *Counseling Psychologist, 27,* 589-592.

Atran, S. (1990). *Cognitive foundations of natural history: Towards an anthropology of science.* Cambridge, MA: Cambridge University Press.

Boysen, G. and Vogel, D. (2007). Biased assimilation and attitude polarization in response to learning about biological explanations of homosexuality. *Sex Roles, 57*, 755-762.

Brickman, D., Rhodes, M., Ellsworth, P., & Gelman, S. (2009). The relation between prejudice and beliefs about genetics and choice, Unpublished manuscript.

Crandall, C., & Eshleman, A. (2003). A justification-suppression of the expression and experience of prejudice. *Psychological Bulletin*, *129*, 414-446.

Crandall, C.S., & Reser, A.H. (2005). Attributions and weight-based prejudice. In K. Browness, R. Puhl, M. Scwartz, & L. Rudd (Eds.) *Weight bias: Nature, consequences, and remedies* (pp. 83-96). New York: Guildford Publications.

Diesendruck, G., & Gelman, S.A. (1999). Domain differences in absolute judgments of category membership: Evidence for an essentialist account of categorization. *Psychonomic Bulletin & Review, 6,* 338-346.

*Ernulf, K., Innala, S., & Whitam, F. (1989). Biological explanation, psychological explanation, and tolerance of homosexuals: A cross-national analysis of beliefs and attitudes. *Psychological Reports*, *65*, 1003-1010.

Estes, Z. (2003). Domain differences in the structure of artifactual and natural categories. *Memory & Cognition, 31,* 199-214.

Franklin, K. (2000). Antigay behaviors among young adults: Prevalence, patterns, and motivators in a noncriminal population, *Journal of Interpersonal Violence, 15,* 339 – 362.

Gelman, S.A. (2003). *The essential child.* New York: Oxford University Press.

Gelman, S.A., Heyman, G., & Legare, C. (2007). Developmental changes in the coherence of essentialist beliefs about psychological characteristics. *Child Development, 78,* 754-774.

Haider-markel, D. & Joslyn, M. (2008). Beliefs about the origins of homosexuality and support for gay rights: An empirical test of attribution theory. *Public Opinion Quarterly. 72*, 291-310.

*Haslam, N., & Levy, S. R. (2006). Essentialist beliefs about homosexuality: Structure and implications for prejudice. *Personality and Social Psychology Bulletin, 32*, 471-485.

*Haslam, N., Rothschild, L., & Ernst, D. (2002). Are essentialist beliefs associated with prejudice? *British Journal of Social Psychology, 41*, 87-100.

Hebl, M., Foster, J., Mannix, L, & Dovidio, J. (2002). Formal and interpersonal discrimination: A field study of bias toward homosexual applicants, *Personality and Social Psychology Bulletin, 28,* 815 – 825.

Hedges, L. & Vevea, J. (1998). Fixed- and random- effects models in meta-analysis. *Psychological Methods, 3,* 486-504.

*Hegarty, P. (2002). 'It's not a choice, it's the way we're built': Symbolic beliefs about sexual orientation in the US and Britain. *Journal of Community & Applied Social Psychology*, *12*, 153-166.

Hegarty, P. & Golden, A. (2008). Attributional beliefs about the controllability of stigmatized traits: Antecedents or justifications of prejudice? *Journal of Applied Social Psychology, 38*, 1023-1044.

*Hegarty, P., & Pratto, F. (2001). Sexual orientation beliefs: Their relationship to anti-gay attitudes and biological determinist arguments. *Journal of Homosexuality, 41*, 121-135.

Hempel, C.G. (1965). *Aspects of scientific explanation and other essays in the philosophy of science.* New York: New York Free Press.

Herek, G. (2000). The psychology of sexual prejudice. *Current Directions in Psychological Science, 9,* 19-22.

*Herek, G., & Capitanio, J. (1995). Black heterosexuals' attitudes toward lesbians and gay men in the United States. *Journal of Sex Research, 32,* 95-105.

Higgins, J., & Thompson, S. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine, 21*, 1539-1558.

Hirschfeld, L. (1996). *Race in the making: Cognition, culture, and the construction of human kinds.* Cambridge, MA: The MIT Press.

Hornsey, M.J., & Hogg, M.A. (2000). Assimilation and diversity: An integrative model of subgroup relations. *Personality and Social Psychology Review, 4,* 143-156.

*Horvath, M., & Ryan, A. (2003). Antecedents and potential moderators of the relationship between attitudes and hiring discrimination on the basis of sexual orientation. *Sex Roles*, *48*, 115-130.

*Jayaratne, T. E., Ybarra, O., Sheldon, J. P., Brown, T. N., Feldbaum, M., Pfeffer, C. A., Pfeffer, C.A., & Petty, E.M. (2006). White Americans' genetic lay theories of race differences and sexual orientation: Their relationship with prejudice toward blacks, and gay men and lesbians. *Group Processes & Intergroup Relations, 9*, 77-94.

Kalish, C. (1995). Essentialism and graded membership in animal and artifact categories. *Memory and Cognition, 23,* 335 – 353.

Kalish, C.W. (1998). Natural and artifactual kinds: Are children realists or relativists about categories? *Child Development, 34,* 376-391.

Kalish (2002). Essentialist to some degree: Beliefs about the structure of natural kind categories, *Memory and Cognition, 30,* 340 – 352.

Keil, F.C. (1995). The growth of causal understanding of natural kinds. In D. Sperber, D. Premack, & A.J. Premack (Eds.). *Causal cognition: A multidisciplinary debate* (pp.234-262). Oxford: Oxford University Press

*King, B. R. (2001). Ranking of stigmatization toward lesbians and their children and the influence of perceptions of controllability of homosexuality. *Journal of Homosexuality, 41*, 77-97.

*Landén, M., & Innala, S. (2002). The effect of a biological explanation on attitudes towards homosexual persons. A Swedish national sample study. *Nordic Journal of Psychiatry, 56*, 181-186.

Malt, B.C. (1990). Features and beliefs in the mental representation of categories. *Journal of Memory and Language, 29,* 289-315.

*Matchinsky, D., & Iverson, T. (1996). Homophobia in heterosexual female undergraduates. *Journal of Homosexuality*, *31*, 123-128.

Meyer, I. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129,* 674 – 697.

Oldham, J. & Kasser, T. (1999). Attitude change in response to information that male homosexuality has a biological basis, *Journal of Sex and Marital Therapy, 25,* 121 – 124.

Parrott, D., & Zeichner, A. (2005). Effects of sexual prejudice and anger on physical aggression toward gay and heterosexual men. *Psychology of Men and Masculinity, 6,* 3-17.

Piskur, J., & Degelman, D. (1992). Effect of reading a summary of research about biological bases of homosexual orientation on attitudes toward homosexuals. *Psychological Reports, 71,* 1219-1225.

Pratarelli, M., & Donaldson, J. (1997). Immediate effects of written material on attitudes toward homosexuality. *Psychological Reports, 81,* 1411-1415.

Prentice, D., & Miller, D. (2007). Psychological essentialism of human categories. *Current Directions in Psychological Science, 16,* 202-206.

*Raiz, L. (2006). College students' support of rights for members of the gay community. *Journal of Poverty, 10*, 53-75.

Rhodes, M., & Gelman, S.A. (2009). A developmental examination of the conceptual structure of animal, artifact, and human social categories. Manuscript submitted for publication.

Rothbart, M., & Taylor, M. (1992). Category labels and social reality: Do we view social categories as natural kinds? In G.R. Semin & K. Fiedler (Eds.), *Language, interaction and social cognition* (pp. 11-36). Thousand Oaks, CA: Sage Publications.

*Sakalli, N. (2002). Application of the attribution-value model of prejudice to homosexuality. *Journal of Social Psychology, 142*, 264-271.

Sheldon, J., Pfeffer, C., Jayaratne, T., Feldbaum, M., & Petty, E. (2007). Beliefs about the etiology of homosexuality and about the ramifications of discovering its possible genetic origin. *Journal of Homosexuality, 52*, 111-150.

Solomon, R. (1949). An extension of control group design. *Psychological Bulletin, 46,* 137 – 150.

Tajfel, H. (1982). *Social identity and intergroup relations.* Cambridge: Cambridge University Press.

*Tygart, C. E. (2000). Genetic causation attribution and public support of gay rights. *International Journal of Public Opinion Research, 12*, 259-275.

VanderStoep, S., & Green, C. (1988). Religiosity and homonegativism: A path-analytic study. *Basic and Applied Social Psychology, 9,* 135 – 147.

Waxman, S., Medin, D., & Ross, N. (2007). Folkbiological reasoning from a cross-cultural developmental perspective: Early essentialist notions are shaped by cultural beliefs. *Developmental Psychology, 43*, 294-308.

Weiner, B. (1993). On sin versus sickness: A theory of perceived responsibility and social motivation, *American Psychologist, 48,* 957 – 965.

Weiner, B., Perry, R., & Magnusson, J. (1988). An attributional analysis of reactions to stigmas. *Journal of Personality and Social Psychology, 55*, 738-748.

*Whitley, B. (1990). The relationship of heterosexuals' attributions for the causes of homosexuality to attitudes toward lesbians and gay men. *Personality and Social Psychology Bulletin, 16*, 369-377.

*Wood, P. B., & Bartkowski, J. P. (2004). Attribution style and public policy attitudes toward gay rights. *Social Science Quarterly, 85*, 58-74.

Note. References marked by a * are included in the meta-analysis.

Notes

[1]Hegarty & Pratto (2001) and Hegarty (2002) included the item "Doctors and psychologists can help people change their sexual orientation" as an item measuring discreteness/fundamentality. However, because this item cross-loaded (-.47) on the immutability factor, we did not include this item in our analysis (fortunately, the authors included correlations between each item and prejudice). Because of this same reason, we excluded these studies when looking at the relation between immutability and discreteness.

Table 3.1

Effect sizes for the relations between essentialist beliefs and prejudice, with confidence intervals, and sample sizes, for each study included in the meta-analysis

Citation	*r*	95% CI LL	95% CI UL	*N*	Essentialist Belief
Tygart (2000)	-.77	-.80	-.74	600	Immutability
Horvath & Ryan (2003)	-.52	-.61	-.42	231	Immutability
Sakalli (2002)	-.47	-.56	-.38	291	Immutability
Wood & Bartkowski (2004)	-.43	-.51	-.35	367	Immutability
Haslam, Rothschild, & Ernst (2002)	-.43	-.59	-.23	81	Immutability
Hegarty (2002) Study 1	-.40	-.55	-.22	97	Immutability
Herek & Captitanio (1995) Study 1	-.40	-.48	-.31	363	Immutability
Herek & Capitanio (1995) Study 2	-.39	-.48	-.29	295	Immutability
Haslam & Levy (2006) Study 3	-.38	-.49	-.26	216	Immutability
Matchinsky & Iverson (1996)	-.35	-.51	-.17	107	Immutability
Schmalz (1993)	-.35	-.39	-.30	1004	Immutability
Brickman et al. (2009)	-.33	-.45	-.19	178	Immutability
Haslam & Levy (2006) Study 2	-.29	-.37	-.21	486	Immutability
Landen & Innala (2002)	-.28	-.32	-.23	340	Immutability
Whitley (1990)	-.26	-.35	-.16	365	Immutability
Jayaratne et al. (2006)	-.25	-.32	-.17	600	Immutability
Hegarty & Pratto (2001)	-.24	-.45	-.12	116	Immutability
Ernulf, Innala, & Whitam (1989) Study 1	-.22	-.34	-.11	269	Immutability
King (2001)	-.19	-.30	-.06	245	Immutability
Aguero, Bloch, & Byrne (1984)	-.18	-.27	-.09	434	Immutability
Ernulf, Innala, & Whitam (1989) Study 2	-.17	-.27	-.07	337	Immutability
Hegarty (2002) Study 2	-.14	-.36	.09	72	Immutability
Brickman et al. (2009)	-.44	-.55	-.31	177	Universality
Haslam & Levy (2006) Study 2	-.30	-.37	-.21	485	Universality
Haslam & Levy (2006) Study 1	-.19	-.31	-.05	215	Universality
Hegarty & Pratto (2001)	-.18	-.35	0	115	Universality
Haslam, Rotschild, & Ernst (2002)	.17	-.05	.37	81	Universality
Haslam & Levy (2006) Study 2	.68	.60	.75	216	Discreteness
Hegarty (2002) Study 1	.57	.43	.70	97	Discreteness
Hegarty & Pratto (2002)	.44	.28	.58	116	Discreteness
Hegarty (2002) Study 2	.38	.12	.53	72	Discreteness
Haslam & Levy (2006) Study 1	.33	.25	.41	486	Discreteness
Haslam, Rothschild, & Ernst (2002)	.14	-.08	.35	81	Discreteness

Figure 3.1

Box-plot of Pearson correlation effect sizes by essentialist belief

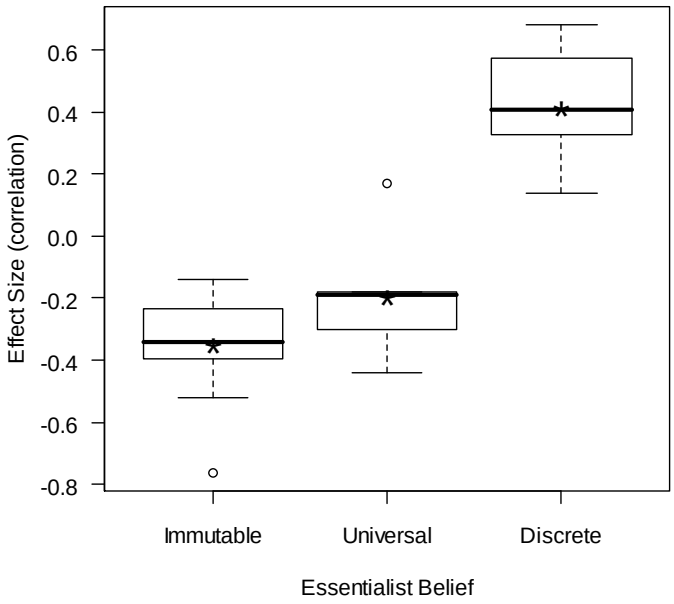


Figure 3.2

Box-plot of Pearson correlation effect sizes by specific type of immutability belief

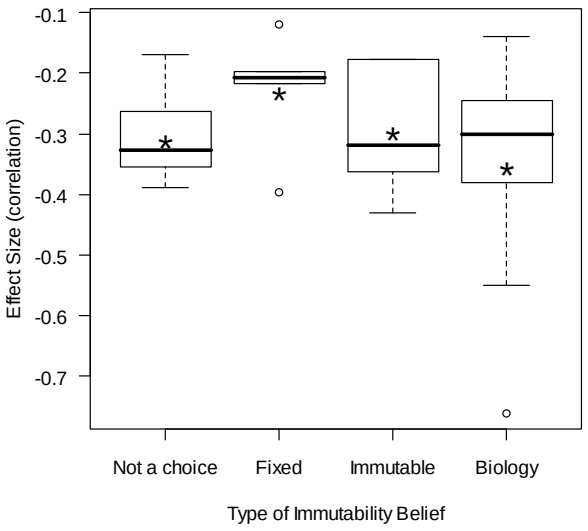
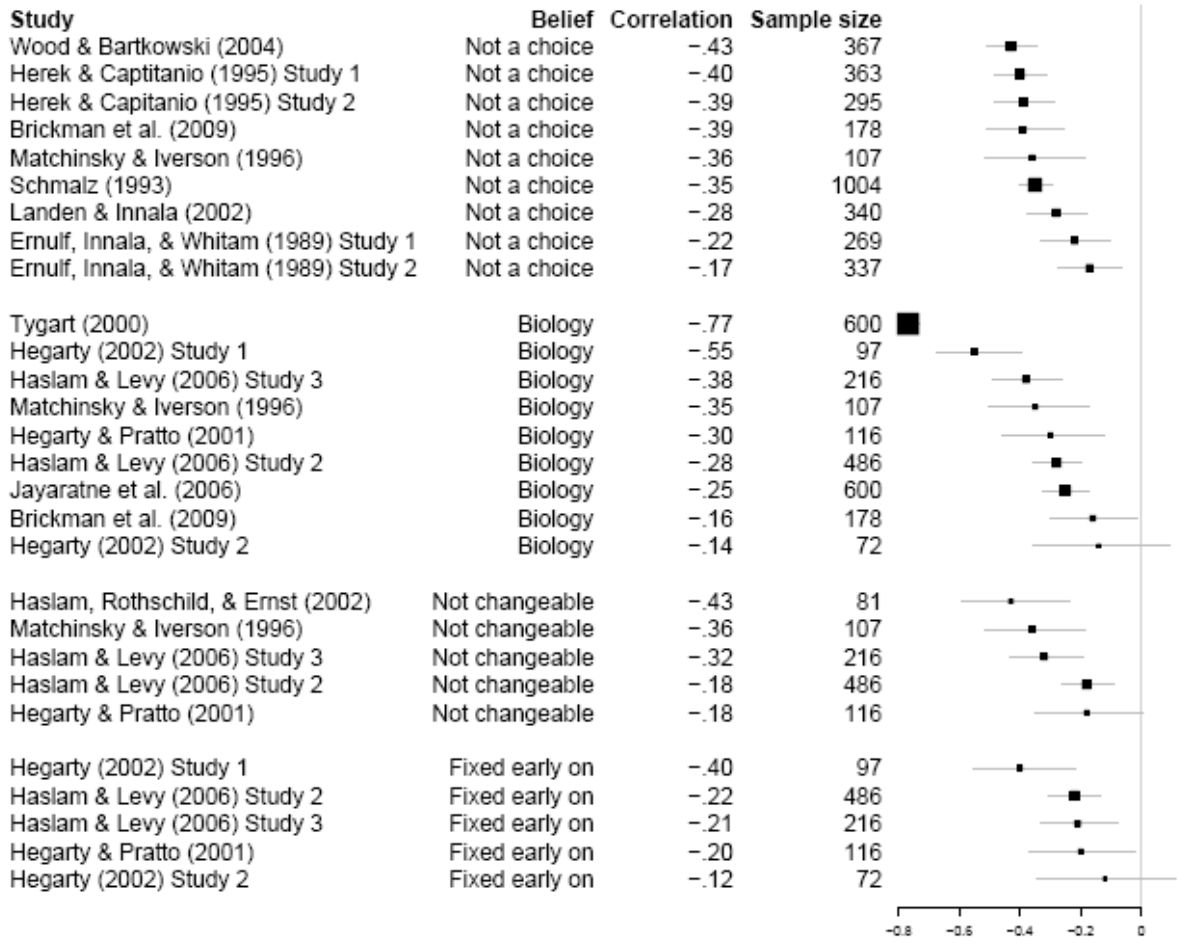


Figure 3.3

Forest plot of Pearson correlation effect sizes by specific type of immutability belief



Chapter 4

The Conditions that Trigger Essentialist Thinking about Social Categories

This paper examines the types of information that people find important when forming social categories. Given that people can be categorized in numerous ways—by race, gender, age, religion, height, favorite sports team, nationality, and so on—how do people determine which of these criteria are most important in determining an individual's social identity, and in making inferences about behavior? The goal of the present paper is to examine the criteria that people think determines social categorization, and in particular to examine the relative influence of information about biological properties (e.g., the identity of one's birth parents) and social properties (e.g., shared goals) in determining an individual's social category membership and behavior.

As a starting point for answering these questions, it is useful to consider that a large body of literature in cognitive psychology suggests that people generally prefer to base categories on deep, conceptually-rich information, such as object origins and internal properties, over more "surface-level" perceptual properties (Murphy & Medin, 1985). For example, in categorizing animals and making inferences about animal behavior, individuals prefer to group together two animals that were both born to lion parents, rather than to group together a lion and a deer that live in the same area, or a lion and a canary that are the same color (see Atran, 1990; Gelman, 2003). Thus, people privilege information about shared biology and origins in animal categorization, and in determining an individual animal's identity and behavior. Similarly, in categorizing

human-made artifacts, such as tools, clothing, or furniture, people prefer to categorize items based on shared function, rather than on perceptual properties, such as color or shape (Bloom, 1996). It is important to note that conceptual and perceptual properties often go together, as opposed to conflicting. In animal categorization, perceptual properties are often a good cue to biological history; for example, finding out that an animal is orange and has stripes is a good cue that the animal was born from tiger parents. In artifact categorization, shape is often a good cue to function; for example, finding out that a flat object is round with twelve equally spaced marks near the edge is a good cue that the object is used for telling time. In principle, however, it is possible to separate the two, and when perceptual and conceptual properties conflict, a large number of studies has demonstrated that people privilege conceptual over perceptual properties in determining category membership (Gelman & Markman, 1986; Gelman, Collman, & Maccoby, 1986).

In thinking about the basis of social categorization, then, it seems reasonable to assume that people will privilege deep conceptual information about people (e.g., about biological or psychological properties) in determining an individual's social category membership and behavior. Social categorization is more complicated, however, because humans, perhaps more so than animals and artifacts, have multiple levels of rich conceptual properties. For example, humans have a biological history, which includes genetically-determined properties (e.g., one's sex, eye color, and other inherited properties). In addition to biological and genetic histories, however, people also have rich social-psychological histories, which include things like the traditions and religious

beliefs that an individual learns and engages in throughout development, as well as the social goals that a person grows up valuing.

Often, an individual's biological and social-psychological histories will be tightly correlated. For example, being born and raised by Jewish parents will involve transmission of both genetic features and social knowledge and practices. Yet, the question remains: what makes someone a category member? In this example, is it being born to Jewish parents, or being raised with particular beliefs and practices? In other words, what would we expect a person's identity to be, and how would we expect them to behave, if information about biological and social-psychological properties conflicted with each other?

In the present paper, I examine the relative weight that people attribute to biological information (e.g., about genetics and the identity of one's birth parents) and social information (e.g., about the rearing environment and social goals) in reasoning about social identity and behavior. In doing so, I examine predictions drawn from two hypotheses—the essentialism hypothesis and the coalitional hypothesis—which make different predictions about the types of information that people will find informative for making these inferences. In this work, individuals are told "switched-at-birth" stories (Gelman & Wellman, 1991; Taylor, 1996), in which a baby is born to parents from one novel social group and raised by parents from another. Test questions then ask what the baby will be like as an older child, in terms of both social identity (e.g., will the child share the social category membership of the birth or adoptive family?) and social behavior (e.g., will the child engage in the social practices of the birth or adoptive

family?). Across conditions, I varied the features that distinguished the two novel social groups, to test predictions drawn from the essentialism and coalitional hypotheses.

The essentialism hypothesis predicts that individuals will find information about biological properties and birth history particularly informative in reasoning about category membership and category-based behaviors (Gelman, 2003). From this perspective, individuals view membership in particular categories as determined by the presence of an underlying causal property, which is obtained through natural processes that occur before birth, is stable across development and contexts, and has a causal role in the development of behavior. As an example, being Jewish may be viewed as determined by a category 'essence', which is inherited by birth, persists even if raised by non-Jewish parents, and will increase the likelihood of a range of behaviors and beliefs. Thus, from this perspective, in the present experiment, individuals should view category identity as determined by the child's birth parents, and they should view the child as (at least somewhat) likely to engage in behaviors associated with this category membership, even though the child was not socialized into an environment where such behaviors took place.

There is a large body of literature spanning developmental, cognitive, and social psychology which suggests that people do indeed view many categories in an essentialist manner. For example, essentialism appears to explain how individuals reason about animal identity, in that people believe that membership in animal species kinds is determined by one's birth parents, persists across contexts, and causes the development of category-linked properties. As an example, a lion is a lion because it was born to lion parents, and if raised by sheep, will still be a lion and will also still be strong, ferocious, and have very sharp teeth. This way of thinking about animal identity is found from a

very early age (Gelman & Wellman, 1991), as well as across diverse cultural contexts (Sousa, Atran, & Medin, 2002; Waxman, Medin, & Ross, 2007). There is also evidence that people reason about at least some human categories in a similarly essentialist manner. For example, young children and adults generally view gender as determined by biological properties that are set before birth, as constant across age and contexts, and as causing the development of physical and some behavioral properties (Taylor, 1996; Taylor, Rhodes, & Gelman, in press; see also Hirschfeld, 1996). Adults also endorse essentialist beliefs about a range of other social categories, particularly those that have some claim to a biological basis (e.g., race, ethnicity, and sexual orientation; Haslam, Rothschild, & Ernst, 2002).

In the present work, if participants engage in essentialist thinking about social identities, they should view the character's identity and behavior as influenced by the identity of the birth-parents. Also, to manipulate the extent to which participants are likely to view the novel social categories as biologically-based (and thus, the extent to which these groups should elicit essentialism), I varied whether the two novel social groups were described as genetically similar or genetically distinct. Thus, if adults engage in essentialist thinking about these novel groups, they should view identity and behavior as influenced by the identity of the birth-parents, and they should do so more strongly when the two novel social categories are described as genetically distinct.

In this work, I also examined the extent to which individuals engage in *coalitional* reasoning about identity and behavior. Coalitional reasoning involves reasoning about social identities as determined by membership in cooperative groups. Thus, it differs from essentialism in that coalitional reasoning focuses on social-psychological properties,

instead of biological properties, as central to determining identity and behavior. Cosmides, Tooby, and Kurzban (2003) have proposed that evolution has made humans particularly attuned to detecting and thinking about cooperative alliances (see also Kurzban & Leary, 2001; Tooby & Cosmides, 1988). Cosmides and colleagues have proposed that during the course of human evolution, people worked cooperatively within small coalitional groups to compete with other groups over limited resources. In this context, social alliances could also be reorganized in response to changing environmental challenges. Thus, Cosmides and her colleagues (2003) suggest that natural selection favored a set of cognitive abilities that facilitated reasoning about and tracking these shifting alliances. Following this description, coalitional reasoning differs from essentialism not only in the privileging of social-psychological properties (e.g., shared goals and cooperative actions) over biological properties, but also in that coalitional reasoning predicts that people allow for the possibility that social identities are acquired and can change.

Several present day social categories appear to be organized around beliefs about shared goals, cooperative action, and between-group competitions, consistent with coalitional psychology. For example, membership in political parties appears to be determined by shared goals and defined by cooperative actions. Also, whereas membership in such categories is predictive of a range of properties (e.g., attitudes, voting behaviors, perhaps where a person lives, and so on), membership in these categories is also understood as malleable (e.g., Senator Joe Lieberman). Kurzban et al. (2001) provide evidence that coalitional groups play a particularly important role in social information processing. They presented racially diverse coalitional groups in a

"who said what?" memory retrieval paradigm (Taylor, Fiske, Etcoff, & Ruderman, 1978), and found that participants appeared to encode coalitional identities, instead of racial identities, in this context. In particular, when participants were presented with coalitional groups, with each containing two Black and two white members, participants' encoding of race was dramatically reduced, in that they made fewer within-race errors in retrieval compared to baseline (e.g., when similar groups were presented, but without coalitional information). In contrast, there was a high level of within-coalition errors in retrieval, suggesting that participants encoded coalitional identities, over racial identities, during the experimental task. These findings are particularly striking, given that pitting race against a wide-range of other features has not been found to reduce the role of race in information processing. Thus, coalitional identities "won out" over a particularly strong distracter feature.

From the coalitional perspective, an individual's social identity is determined by membership in cooperative alliances. Thus, if participants engage in coalitional thinking in the present experiment, then they should view identity as determined entirely by the environment of upbringing (as the child participates in the cooperative activities of the adoptive-social group). Further, coalitional reasoning should be particularly elicited in situations of social competition. Thus, I manipulated whether the two social groups were described as competing over a limited resource, or as not competing (in the no competition conditions, they were described as having distinct, but non-competitive, cultural practices).

In the present paper, I examined the extent to which individuals engage in essentialist and coalitional reasoning about identity and behavior, and also examined how

individuals approach these questions when information favoring the two types of reasoning is pitted against each other. Thus, this study examines the intersection of essentialist and coalitional thinking in adult social cognition. The present study included four conditions, which followed a 2 genetic properties (differences or similarities) X 2 social properties (coalitional or cultural) factorial. In the genetic differences conditions, the two social groups were described as having many unobservable genetic differences, which should prime essentialist representations of social identities. Alternately, in the genetic similarities conditions, the two groups were described as sharing a set of genetic predispositions. In the coalitional conditions, the two groups were described as competing over a limited resource, whereas in the cultural conditions, they were described as having distinct, but non-competitive, cultural practices.

These conditions vary in the extent to which should they should prime essentialist vs. coalitional thinking about identity (see Table 4.1). The genetic-differences plus culture condition should prime essentialist thinking, by suggesting that the two populations are genetically distinct (and thus that the social categories have a biological basis). Also, by describing distinct cultural groups, instead of competing coalitions, this condition does not provide any information that should directly elicit coalitional reasoning. Therefore, we should find the strongest evidence of essentialism in this condition, such that individuals in this condition should be more likely to view social identity as shared with birth-parents, as well as to expect the character to engage in behaviors that demonstrate a lingering connection to this social identity group.

In contrast, the genetic-similarities plus coalition condition should elicit the strongest coalitional reasoning. In this condition, the social groups are described as

competing cooperative alliances. Thus, if participants view social identities as determined by shared goals and coordinated actions under these circumstances, then they should view social identities and behavior as strongly shared with the adoptive social group, and not at all shared with the social group of the birth parents. Because this condition presents information that the two social groups are genetically similar, there is no information that should directly elicit essentialist thought.

The remaining two conditions are less straightforward. The genetic similarities plus culture condition does not contain information that should directly elicit either essentialist or coalitional thinking because the two groups are described as genetically similar and are not described as competing alliances. Thus, this condition provides an opportunity to examine whether coalitional or essentialist thought provides the "default" mode of social reasoning. For example, if participants view identity and behavior as influenced by the birth-parents, even in the absence of information that the populations are genetically distinct, this would provide strong evidence of an essentialist bias. In contrast, if participants view identity and behavior as strongly influenced by the adoptive-parents, even in the absence of information about cooperative alliances or social competition, this would be consistent with the proposal that adults readily engage in coalitional reasoning about social identities.

The fourth condition includes information that should trigger *both* essentialist and coalitional thinking. Particularly, participants are told that the populations are genetically distinct (which should elicit essentialism) and that they are competing over a limited resource (which should elicit coalitional thinking). Thus, this condition provides a critical test of whether participants think that identity is determined by birth or by socialization

into cooperative groups, and will allow us to test which type of thinking "wins out" when they are pitted against each other.

The present study is the first to examine the intersection of essentialist and coalitional thinking in adult social reasoning. One relevant previous study was conducted with young children by Rhodes, Brickman, and Gelman (2009). They presented a similar design, involving switched-at-birth scenarios with novel social groups, to 5-year-olds, and varied whether the groups were depicted as physically distinct (i.e., they had the same or different skin color) and whether the groups were competing cooperative alliances or non-competitive groups. This study revealed strong evidence of coalitional thinking in young children. Particularly, although these young children understood physical properties (including skin color) as inherited, they expected social identity and behavior to match the adoptive-social group, and they made stronger adoptive-parent predictions when the groups were described as competing cooperative alliances than as non-competitive social groups. Given the similarities in the design between the present study and this previous work, the present research will also provide an opportunity to begin consideration of how the interaction between essentialist and coalitional thinking shifts across development.

Method

Participants

Participants were 146 individuals recruited from university campuses and nearby coffee shops in a town in the Midwestern United States. Participants received a $5 gift card as compensation. Seven individuals failed a manipulation check (see below) and were excluded. The remaining 139 participants (58 female, 79 male, 2 did not specify; 30 freshmen, 32 sophomores, 15 juniors, 25 seniors, 5 graduate students, 14 college

graduates, 18 did not specify; 111 White, 14 Black, 5 Asian, 2 Native American, 4 Hispanic, 3 did not specify) ranged in age from 18 to 69 (M = 26.30, SD = 10.35).

Design

The design was a 2 genetic properties (differences, similarities) X 2 social properties (coalitional, cultural) between-subjects factorial design. Participants were randomly assigned to one of the four conditions.

Procedure

Participants individually read the story to which they had been assigned, and then completed the dependent variables. The exact text of the stories is presented in the Appendix. All participants read about two proximal islands (Oak Island and Maple Island), and were told that the populations on each island do not interact with each other. In the genetic similarities condition, the people on the two islands were described as having a number of genetic similarities (e.g., on both islands, people had predispositions to absorb calcium and develop strong bones). In the genetic differences condition, the people on the two islands were described as having a number of genetic differences (e.g., on one island, predispositions to absorb calcium and develop strong bones; on the other island, predispositions to absorb Vitamin A and have good eyesight).

In the coalition condition, participants were told that the survival of the islands is threatened. In particular, they were told that a government on "the mainland" threatens to destroy one of the islands to make way for an industrial development project. As a result, the people on each island work hard to make sure it is the other island – not their island – that is destroyed. For example, children raise money, sing insulting chants about the other island, and often wear "Save Maple-island" t-shirts or "Save Oak-island" t-shirts.

In the culture condition, no conflict was described, and instead, the islands were described as having a number of distinct cultural practices. For example, on one island, the people practice a religion known as Puru, which focuses on spirituality in nature, and involves following a vegetarian diet, holding religious ceremonies in the woods, and includes a particular code of ethics that focuses on equality. The other island practices a religion called Frulee, which focuses on worship of a powerful deity, and involves learning to read ancient texts, building large ornate churches, and includes a particular code of ethics that focuses on respect for authority.

After the story, participants read about a family on one of the islands who has a child and goes to an adoption center on the mainland to give their baby up for adoption. Then, two parents from the other island come to the adoption center and adopt the baby – without knowing that the baby was born on the other island. The family raises the baby as their own, and the baby grows up to be a happy child.

The following factors were counterbalanced: which properties/practices belong to Oak Island and Maple Island, whether the adopted child was born to parents of Oak Island or Maple Island, and whether the adopted child was a boy or girl.

Overview of Test Questions. Participants were then asked questions regarding what the adopted baby would be like as an older child. These questions included items about biological properties, identity, and social bonding. Participants in the coalition condition then completed questions assessing support for coalitional activities, and participants in the culture condition completed questions assessing support for religious activities. Then all participants read that the child grew up and moved to the mainland, and were asked questions assessing belief about the extent to which the grown-up child

would interact with grandchildren of descendents of each island. Participants in the coalition condition were then asked to remember back to when the child lived on the island, they read: 'Imagine that on Maple Island, they practice a religion called Puru, and that on Oak Island, they practice a religion called Frulee'; they were then asked the questions assessing support for religious activities. Participants in the culture condition were then asked to remember back when the child lived on the island: they read, 'Imagine a threat arose that could possibly lead to the destruction of one or both of the islands'; they were then asked the questions assessing support for coalitional activities. Then all participants completed demographic information, and a set of measures for exploratory analyses.

Genetic properties. Genetic similarity to birth-island was assessed with three questions ($\alpha = .64$). Two questions asked whether the child would have a genetic predisposition for the two properties that were attributed to the birth-island in the story, on a 7 point scale (1 = Definitely No, 7 = Definitely Yes). The third question asked how genetically similar the child was to people on the birth-island (1 = Not at all; 7 = Completely).

Genetic similarity to adoptive-island was assessed with three questions ($\alpha = .92$). Two questions asked whether the child had a genetic predisposition for the two properties in the story that were attributed to the adoptive-island, on a 7 point scale (1 = Definitely No, 7 = Definitely Yes). The third question asked how genetically similar the child was to people on the adoptive-island (1 = Not at all; 7 = Completely).

Social Identity. Birth-island identity and adoptive-island identity were each assessed with one question ("Is the child an Oaker [Mapleton]?"; 1 = Definitely No, 7 = Definitely Yes)

Social Bonding. Bonding to the birth-island (α = .72) and adoptive-island (α = .58) were each assessed with three questions that asked how much will the child feel bonded to, feel like, and like Oakers and Mapletons (1 = Definitely No, 7 = Definitely Yes).

Coalitional Activities. Support for coalitional activities on the adoptive island (α = .56) was assessed with three questions, which asked how much the child would want to save, feel connected to the goal of saving, and participate in efforts to save the island the she [he] lives on.

Support for coalitional activities on the birth-island (α = .63) was assessed with two questions, which asked how much the child would want to save, and feel connected to the goal of saving, the island of the birth-parents. All questions were asked on a 7-point scale (1 = Not at all, 7 = Very much).

Religious Practices. Participation in religious activities on the adoptive island (α = .87) was assessed with three questions, which asked how much the child would participate in the traditions of, feel connected to the practices of, and believe the teachings of the religion on the island that she [he] lives on. Participation in religious activities on the birth-island (α = .81) was assessed with two questions, which asked how much the child would believe the teachings of and feel connected to the practices of the religion of the birth-parents. All questions were asked on a 7-point scale (1 = Not at all, 7 = Very much).

Social Network. The extent to which the grown-up child who had moved to the mainland would interact with the social network of the birth-island (α = .88) and adoptive-island (α = .90) were each assessed with three questions that asked whether the boy would be friends with, marry, and go into business with people whose grandparents grew up on Maple Island and Oak Island (1 = Definitely No, 7 = Definitely Yes).

Exploratory Measures. Participants listed their nationality, religion, political affiliation, and the extent to which they identified with each affiliation, along with a rating of political conservatism. Prejudice against Blacks was assessed with a 4-item prejudice measure (α = .81) developed by Brickman et al. (2009) based on the feeling thermometer (e.g., "I feel positively towards Blacks.") and social distance scale (e.g., "I would be happy having a Black person as my best friend."). Belief in genetic determinism (α = .88) was assessed with a 10 item (e.g., "The fate of each person lies in his or her genes.") shortened version of a scale developed by Keller (2006).

Results

Preliminary Analyses and Sample Selection

A preliminary examination of the data indicated that some participants had difficulty processing the study materials. For example, a number of participants who read the paragraph describing genetic differences between the islands did not respond as if they understood these genetic differences. These participants were excluded from analyses. In particular, I excluded from all analyses 7 participants in the different-genes condition whose responses indicated they did not think that there were genetic differences between the groups (6 responded that child was equally genetically similar to Oakers and Mapletons, 1 responded that child was equally likely to have vitamin/cancer properties of

Oakers and Mapletons). In contrast, participants did not have difficulty understanding the genetic-similarities condition; all participants in this condition reported that the child would have the genetic predispositions of both islands. There were also a number of participants whose pattern across questions of a particular type indicated that they occasionally became confused as to which were the birth- and adoptive-islands. These participants were excluded only for analyses involving these items (N = 18 genetics, N = 4 bonding, N = 4 social network, N = 11 coalition, N = 14 religion). These problems clearly indicate some weaknesses in the experimental design, which will be addressed in the general discussion. Nevertheless, for the present purposes, it seemed useful to identify the sample of participants who accurately understood the study materials, and to restrict analyses to these participants. Given that attrition was not equivalent across conditions (e.g., the genetic differences condition appeared to be more difficult to understand than the genetic similarities condition), results should be interpreted cautiously. All descriptive statistics by condition are presented in Table 4.2.

Predictions about Genetic Properties

As expected, overall, participants thought that the child would share the genetic properties of the birth island (M overall = 6.06, SE = .07). There was a significant main effect of genes, $F(1, 117) = 11.41$, $p < .001$, however, such that participants thought the child would share more genetic properties with the birth-island in the genetic differences condition (M = 6.30, SE = .10) than in the genetic similarities condition (M = 5.81, SE = .09). There was also a main effect of coalition, $F(1, 117) = 13.19$, $p < .001$, such that participants thought the child would share more genetic properties with the birth island in

the culture condition (M = 6.28, SE = .10) than in the coalition condition (M = 5.83, SE = .09).

As expected, there was a highly significant main effect of genes on how much participants thought the child would share the genetic properties of the adoptive island, $F(1, 117) = 435.43$, $p < .001$. Participants said that the child would not share genetic properties with the adoptive-island in the genetic differences condition (M = 1.97, SE = .12), but would share properties in the genetic similarities condition (M = 5.50, SE = .12).

Predictions about Identity

Participants were asked whether the child would be an Oaker, and whether the child would be a Mapleton, each on a scale from 1 = Definitely No to 7 = Definitely Yes. The distribution for the birth-parent island was strongly bimodal, however, so I classified responses from 1 to 4 as 'No' and 5 to 7 as 'Yes'. The proportion of participants who responded that the child would have the social identity of the birth island did not significantly vary by condition, and ranged from 51% to 58%.

Participants were also quite likely to say that the child would have the identity of the adoptive-island. Affirmative responses to this question ranged from 65% to 80%, and did not vary by condition. Participants were significantly more likely to say that the child would have the social identity of the adoptive-island than the birth-island, $p < .01$. Because the distribution for adoptive-parent identity was skewed to the left (as opposed to bimodal), I also conducted an ANOVA. There was a significant interaction between coalition and genes, $F(1, 135) = 3.79$, $p = .05$, such that in the coalition condition, participants predicted that the child would be less likely to have the adoptive-island identity in the different-genes condition (M = 4.53, SE = .33) than in the same-genes

condition (*M* = 5.51, *SE* = .33), *p* = .04. There was no effect of genes in the culture condition (*M* different = 5.12, *SE* = .33; *M* same = 4.83, *SE* = .32, *p* = .5).

Predictions about Social Bonding

Participants thought the child would generally not be bonded to the birth-island (*M* overall = 1.99, *SE* = .09). There was a significant main effect of genes, however, such that participants thought the child would be more bonded to the birth-island in the different-genes condition (*M* = 2.19, *SE* = .13) than in the same-genes condition (*M* = 1.78, *SE* = .12), *F*(1, 131) = 5.25, *p* = .02. There was also a marginal main effect of coalition, such that participants thought the child would be more bonded to the birth-island in the culture condition (*M* = 2.14, *SE* = .13) than in the coalition condition (*M* = 1.84, *SE* = .13), *F*(1, 131) = 2.86, *p* = .09. Although the interaction was not significant, *p* = .37, the effect of genes was significant in the culture condition (*M* different = 2.42, *SE* = .18; *M* same = 1.85, *SE* = .18), *p* = .03, but not in the coalition condition (*M* different = 1.96, *SE* = .18; *M* same = 1.71, *SE* = .17), *p* = .33.

Participants thought that the child would be very bonded to the adoptive-island (*M* overall = 6.56, *SE* = .05); however, there was a significant main effect of genes, such that participants thought the child would be less bonded to the adoptive-island in the different-genes condition (*M* = 6.43, *SE* = .08) than in the same-genes condition (*M* = 6.68, *SE* = .07), *F*(1, 131) = 5.50, *p* = .02.

Predictions about Social Network

Overall, participants thought that the grown-up child would associate with the social group of the birth-island a moderate amount (*M* overall = 3.80, *SE* = .08). There was a significant effect of coalition, such that participants thought the grown-up child

would associate less with the social group of the birth-island in the coalition condition (M = 3.64, SE = .12), than in the culture condition, (M = 3.96, SE = .12), $F(1, 131) = 3.87$, p = .05.

Participants thought that the grown-up child would associate with the social group of the adoptive-island quite a bit (M overall = 5.43, SE = .08), which was significantly more than with the social group of the birth-island ($p < .001$). There was a significant interaction between coalition and genes, $F(1, 131) = 4.94$, p = .03; however, no two conditions were significantly different from each other.

Religious Practices

Overall, participants thought the child would participate in the religious practices of the adoptive-island (M overall = 6.30, SE = .07), and would not participate in the religious practices of the birth-island (M overall = 1.61, SE = .09). For both variables, there was a significant interaction between coalition and genes, $F(1, 121) = 4.44$, $p < .05$; $F(1, 121) = 3.96$, $p < .05$. Participants in the coalition plus genetic differences condition thought they would participate slightly less in the religion of the adoptive-island (M = 5.90, SE = .15) and slightly more in the religion of the birth-island (M = 2.05, SE = .18) than in other conditions (Ms adoptive = 6.32 – 6.60; Ms birth = 1.38 – 1.50), ps < .05.

Coalitional Activities

Overall, participants did not think that the child would participate in the coalitional practices of the birth-island (M overall = 3.54, SE = .11). However, there was a highly significant main effect of coalition, $F(1, 124) = 80.30$, $p < .001$, such that they thought the child would do so more often in the culture condition (M = 4.54, SE = .16), than in the coalition condition (M = 2.53, SE = .16). Participants thought the child would

strongly participate in the coalition activities of the adoptive-island (*M* overall = 6.63, *SE* = .05). There were no main or interactive effects of condition, *p*s > .3.

Exploratory analyses

At the end of the experiment, participants completed a number of self-report measures (e.g., regarding their national identification, religious identification, beliefs in genetic determinism, political beliefs, and racial prejudice). For exploratory purposes, we examined how these measures related to participants' responses during the experiment, as well as how the experimental factors appeared to affect participants' self-ratings.

There was an effect of genes on self-rated national identification, $F(1, 130) = 8.47$, $p = .004$, such that people in same-gene condition had higher national identification ($M = 5.80$, $SE = .20$) than people in the different-gene condition ($M = 4.98$, $SE = .20$). Although the interaction was not significant, $F(1, 130) = 1.91$, $p = .17$, the effect was significant only in the coalition conditions (M same = 5.82, $SE = .28$; M different = 4.62, $SE = .28$), $p = .003$, not in the culture conditions, (M same = 5.77, $SE = .27$; M different = 5.34, $SE = .29$), $p = .28$.

To examine the relations between prejudice against Blacks, belief in genetic determinism, political conservatism, and the dependent variables from the study, I conducted a series of regression analyses. The results below present standardized regression coefficients controlling for experimental condition; however, the values are nearly identical to the bivariate correlations.

Believing the child has the identity of the adoptive-island was negatively related to prejudice against Blacks, $\beta = -.18$, $p = .04$, and with political conservatism, $\beta = -.31$, $p < .001$. Belief in genetic determinism was positively related to prejudice against Blacks, β

= .17, p = .05, and to believing the child would be genetically similar to the birth-island, β = .26, p = .004. Also, conservatism was related to increased prejudice towards Blacks, β = .29, p < .001.

Discussion

This study provided the first examination of interactions between essentialist and coalitional thought in adult social reasoning. In particular, I examined the influences of information about genes and social conflict on participants' reasoning about identity and social behavior, using "switched-at-birth" adoption scenarios. Across conditions, participants predicted that a baby born to parents from one social group, but raised by parents from another, would have the identity category of the birth-parents' social group (i.e., the identity of the birth-island) about half of the time, and the identity of the adoptive-parents' (i.e., the identity of the adoptive- island) about 70% of the time. The overall levels of birth-island predictions about identity provide strong evidence of essentialist thought (although the specific hypothesis that the different-genes conditions would trigger *more* essentialist thinking about identity was not supported). Because participants understood that the character did not have any social contact with the birth island, this pattern indicates that participants believed that some portion of identity was established through processes that occurred at or before birth (e.g., genetic inheritance), as well as that these inherited identities would remain stable across time and contexts.

Although the high percentage of birth-island predictions about identity provides some evidence of essentialist thought, the even higher percentage of adoptive-island predictions does not, in itself, provide evidence of coalitional reasoning. Rather, participants could have made adoptive-island predictions about identity because they

believed in any social form of identity transmission. Such processes could involve coalitional mechanisms, such as shared goals and coordinated actions, but could also included broader forms of socialization. To find clear evidence of coalitional thinking about identity, we would have needed to find *stronger* adoptive-island predictions about identity in the coalition than culture conditions (as was found by Rhodes, Brickman, & Gelman, 2009), which was not the case. In fact, in the present study, predictions about adoptive-island identities appeared to demonstrate the opposite pattern, particularly in the genetic-differences condition (described below).

Overall, there was clear evidence of essentialist thinking in participants' predictions about how the character would behave. Providing participants with information that the two populations were genetically distinct was expected to prime essentialist thinking, and thus increase predictions that the character would feel connected to the island of the birth parents. Indeed, there was clear evidence of such a pattern in participants' reasoning about social bonding. When the populations on the islands were described as having different genetic predispositions, participants predicted that the character would feel less bonded to the adoptive-island, and more bonded to the birth-island, as compared to when the populations on the island were described as having similar genetic predispositions. Thus, whereas participants generally expected the child to be more bonded to the adoptive-island than the birth-island, essentialist thinking, as triggered by information about genetic differences, led them to predict more bonding to the birth island than they otherwise expected.

There was also an unexpected interaction, in which the social conflict presented in the coalition conditions appeared to elicit increased essentialist thinking. When

participants were told that the populations on the islands had distinct genes, and also that the islands were engaged in social conflict (i.e., the condition that pitted essentialist and coalitional information directly against each other), participants thought that the character would be more likely to engage in the religious practices of the birth island. In this condition, participants were also less likely to say that characters would have the identity category of the adoptive-island, or would engage in the religious practices of the adoptive-island. Thus, although participants knew that the child did not have any social contact with the birth island, they believed that the child would have a lingering connection to that island, which would be particularly manifest under conditions of social conflict. This provides clear support for essentialist thinking (wherein identity categories are determined by birth and stable) and does not support the coalitional hypothesis (wherein important category memberships should be believed to be established by shared goals and actions). This pattern suggests that when essentialist and coalitional thinking are pitted against each other, essentialism wins out. Further, this pattern suggests that coalitional information sometimes accentuates essentialist thought.

Several items also revealed limited evidence of coalitional thinking. For example, as compared to participants in the culture conditions, participants in the coalition conditions expected that the character would be less bonded to the birth-island, less likely to associate with people from the birth island, and less likely to engage in activities to help the birth-island during times of social conflict. Although the relevant interaction terms were not consistently significant, these patterns appeared to be more consistent when the two groups were described as having similar genes. These findings suggest that although participants believed that characters would have lingering connections to their

birth islands, they also believed that these connections may sometimes be reduced (instead of accentuated, as described above) in the presence of social conflict. Although future work will be necessary to clarify these patterns, one possible interpretation suggested by the present study is that social conflict either reduces or accentuates lingering connections to the birth category, depending on whether the two categories are understood as genetically similar or distinct.

The present study also revealed some interesting patterns in adults' more general reasoning about genetic transmission. Although participants generally expected characters to have the genetic properties of their birth-island, there were also effects of condition on their responses to these relatively straightforward questions. For example, participants expected that the child would share stronger genetic similarities with the population on the birth-island when the two islands were described as genetically distinct, as well as when social conflict was not described (e.g., in the culture conditions). These findings suggest that how people think about genetic relatedness is importantly affected by social context, and should be explored more thoroughly in future work.

Overall, this study found evidence of fairly strong essentialism, and rather limited evidence of coalitional thought. Thus, one interesting question is why adults in this study failed to engage in coalitional reasoning, given that children did so very robustly in Rhodes, Brickman, and Gelman (2009), and also that adults were quite sensitive to coalitional information in Kurzban et al. (2001). One clear possibility for why the findings from the present study appear inconsistent with Rhodes et al. (2009) is that there could be developmental changes in the extent to which people represent social categories in an essentialist manner. Thus, perhaps adults essentialize a wider range of social

categories than young children do. It is important to note that there is evidence that young children do essentialize some social categories. For example, young children appear to represent gender in an essentialist manner, and in fact, appear to essentialize gender more than adults do (Taylor, 1996; Taylor, Rhodes, & Gelman, in press). However, the present studies should relate most strongly to ethnic or racial essentialism, and there is indeed evidence that racial and ethnic essentialism increase with age (Diesendruck, 2009; Rhodes & Gelman, 2009). Thus, if adults essentialize race and ethnicity more than young children do, this could account for why they were more attentive to essentialist than coalitional cues in the present study, which involved reasoning about the transmission of novel ethnic identities. The present findings involving racial prejudice (which has been found to relate to racial essentialism, Brickman et al., 2009) indeed suggest that how individuals responded to the present study related to the extent to which they essentialize racial and ethnic groups. In the present study, higher levels of prejudice towards African Americans were related to less adoptive-island predictions about identity, thus suggesting that individuals who have more racial prejudice (and perhaps thus higher racial essentialism) were more likely to engage in essentialist thinking in this context.

It is also important to consider why the present studies revealed so little coalitional thinking, given that adults demonstrated very robust attention to coalitional cues in Kurzban et al. (2001). One possibility relates to task differences. Kurzban et al. (2001) focused on categorical perception, by examining the extent to which categories based on race and on coalitions were encoded during a memory confusion protocol (Taylor et al., 1978). They found that participants encoded coalitional categories more

often than race categories, when they were presented with racially diverse coalitional groups. Thus, this study provides evidence that adults privilege coalitional information over information about race during person perception. One possibility is that individuals attend to different cues in person perception than in other higher-level components of social cognition (e.g., when asked to draw complicated social inferences).

Another possibility, however, relates to how coalitions were defined across studies. Kurzban et al. (2001) presented coalitions as competing sports teams. In the present work, we used what was intended to be a stronger coalitional prime (by presenting islands that were competing over survival). One possibility is that presenting such a strong coalitional situation backfired, in that participants felt uneasy about the serious nature of the conflict, and focused their attention on thinking that the conflict was harmful and should be resolved. In other words, perhaps they did not want to "play along" with such a serious war-like situation. Though speculative, this account is supported by the effect of condition on participants' own national identification. If the situation presented in the coalitional conditions led people to think about coalitional interactions (as intended), then one would think that they might rate their own national identification as stronger following the coalitional primes. However, the opposite pattern was found. In particular, participants rated themselves as *less* identified with their country following the coalitional primes (when the story also presented the islands as genetically distinct populations). Thus, this finding suggests that the social conflict stories may indeed have undermined coalitional thinking by presenting such strong situations of conflict.

Examining how the present study fits with previous work will require a series of additional experiments. For example, to understand how the interaction between essentialist and coalitional reasoning shifts across development, it will be necessary to include children and adults in the same study, using similar methods. Also, to compare how adults rely on coalitional thinking for different components of social cognition (e.g., for perception vs. inference), it will be necessary to conduct studies in more similar ways across tasks (e.g., studies that define coalitions in the same way to test person perception and social inference). There were also several methodological problems in the present study (e.g., a substantial proportion of the participants found the scenarios too difficult to follow and failed manipulation checks), which will have to be overcome in future work. The overall information processing load in the present study appears to have been too high. Future work should use simpler stories, and present visual support for both the stories and test questions, to make the central details easier to follow and remember. Although the present studies found rather limited evidence of coalitional thinking, previous work suggests that both children and adults sometimes represent and reason about social categories as coalitional groups, thus this remains an important area for future work. Perhaps the present study will provide important information regarding the boundaries of coalitional thinking in adult social cognition.

Table 4.1

The predicted effects of each condition on essentialist and coalitional thought

Genetic Properties	Social Properties	Should prime…
Different	Cultural	Essentialism
Different	Coalitional	Both
Similar	Cultural	Neither
Similar	Coalitional	Coalitional

Table 4.2

Descriptive statistics by condition

	Coalition						Culture					
	Genetic Similarity			Genetic Differences			Genetic Similarity			Genetic Differences		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Genetic similarity Birth Island	5.64	0.83	33	6.02	0.71	29	5.99	0.87	30	6.57	0.44	29
Genetic similarity Adoptive Island	5.31	0.91	33	2.02	0.74	29	5.68	1.01	30	1.92	1.03	29
Identity – Birth Island (%)	51%		35	58%		33	56%		36	53%		34
Identity – Adoptive Island (%)	80%		35	68%		34	72%		36	65%		34
Identity – Adoptive Island	5.51	1.65	35	4.53	1.93	34	4.83	2.08	37	5.12	2.00	34
Bonding – Birth Island	1.71	0.92	35	1.96	1.00	33	1.85	0.95	34	2.42	1.22	33
Bonding – Adoptive Island	6.69	0.50	35	6.37	0.72	33	6.68	0.46	34	6.49	0.75	33
Social network – Birth Island	3.69	1.01	35	3.59	0.87	32	3.75	0.87	36	4.18	1.06	32
Social network – Adoptive Island	5.53	1.00	35	5.22	0.94	32	5.11	0.81	36	5.51	0.97	32
Coalitional Support – Birth Island	2.43	1.18	34	2.64	1.12	29	4.58	1.39	33	4.50	1.34	31
Coalitional Support – Adoptive Island	6.69	0.38	34	6.61	0.48	29	6.76	0.38	33	6.69	0.54	31
Religious Support – Birth Island	1.50	0.89	29	2.05	1.26	29	1.50	0.93	35	1.38	0.64	32
Religious Support – Adoptive Island	6.32	0.85	29	5.90	1.00	29	6.40	0.73	35	6.59	0.69	32

Note. All responses were on a seven-point scale. The identity questions were transformed to a dichotomous score (1-4 = No, 5-7 = Yes) for the two items labeled with (%). Higher scores indicate more similarity, more bonding, more interaction with the social network, more coalitional support, and more religious support.

References

Allport, G. (1954). *The nature of prejudice.* Cambridge, MA: Addison-Wesley.

Atran, S. (1990). *Cognitive foundations of natural history.* New York: Cambridge University Press.

Bloom, P. (1996), Intention, history, and artifact concepts. *Cognition, 60,* 1-29.

Cosmides, L., Tooby, J., & Kurzban, R. (2003). Perceptions of race. *Trends in Cognitive Sciences, 7,* 173-179.

Diesendruck, G. (2009, April). On the selectivity of labeling effects in induction: The case of ethnicity among Israeli children. In A. Baron & M. Rhodes (Chairs), *Psychological constraints on social categorization and inductive inference.* Symposium conducted at the biennial meeting of the Society for Research in Child Development, Denver, CO.

Gelman, S.A. (2003). *The essential child.* New York: Oxford University Press.

Gelman, S.A., Collman, P. & Maccoby, E. (1986). Inferring properties from categories versus inferring categories from properties: The case of gender. *Child Development, 57,* 396-404.

Gelman, S.A., & Markman, E., (1986). Categories and induction in young children. *Cognition, 23*, 183-209.

Gelman, S. A., & Wellman, H. M. (1991). Insides and essences: Early understandings of the nonobvious. *Cognition, 23,* 183-209.

Gil-White, F. J. (2001). Are ethnic groups biological "species" to the human brain? *Current Anthropology, 42,* 515-554.

Haslam, N., Rothschild, L., & Ernst, D. (2002). Are essentialist beliefs associated with prejudice? *British Journal of Social Psychology, 41*, 87-100.

Hirschfeld, L. (1996). Race in the making: Cognition, culture, and the construction of human kinds. Cambridge, MA: The MIT Press.

Keller, J. (2005). In genes we trust: The biological component of psychological essentialism and its relationship to mechanisms of motivated social cognition. *Journal of Personality and Social Psychology*, *88*, 686-702.

Kurzban, R., & Leary, M.R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin, 127,* 187-208.

Murphy, G.L., & Medin, D.L. (1985). The role of theories in conceptual coherence. *Psychological Review, 92,* 289-316.

Rhodes, M., Brickman, D., & Gelman, S. (2009). Children's concepts of race and social alliances. Manuscript submitted for publication.

Sousa, P., Atran, S., & Medin, D. (2002). Essentialism and folkbiology: Evidence from Brazil. *Journal of Cognition and Culture, 2,* 195-223.

Taylor, M. (1996). The development of children's beliefs about social and biological aspects of gender differences. *Child Development, 67,* 1555-1571.

Taylor, S. E., Fiske, S. T., Etcoff, N. J., & Ruderman, A. J. (1978). Categorical and contextual bases of person memory and stereotyping. *Journal of Personality and Social Psychology*, *36*, 778-793.

Taylor, M., Rhodes, M., & Gelman, S.A. (in press). Boys will be boys; cows will be cows: Children's essentialist reasoning about human and animal development. *Child Development.*

Tooby, J., & Cosmides, L. (1988). *The evolution of war and its cognitive foundations.* Institute for Evolutionary Studies Technical Report, No. 88-1. Palo Alto, CA: Institute for Evolutionary Studies.

Waxman, S.R., Medin, D., & Ross, N. (2007). Folkbiological reasoning from a cross-cultural developmental perspective: Early essentialist notions are shaped by cultural beliefs. *Developmental Psychology, 43,* 294-308.

Yzerbyt, V., Judd, C., & Corneille, O. (2004). *The psychology of group perception: Perceived variability, entitativity, and essentialism*. New York: Psychology Press.

Chapter 5

Conclusion

Across three papers, this dissertation explored the implications of essentialist beliefs for prejudice. This dissertation advanced understanding of the relation between social essentialism and prejudice in three key ways. First, I examined how essentialism relates to prejudice across a wide-range of social categories, towards the aim of identifying characteristics of particular categories that predict whether essentialism relates to more or less prejudice. Second, I examined how three distinct types of essentialist beliefs relate to prejudice towards people who are homosexual. This work considered the multifaceted nature of essentialism, by testing the relations among various essentialist beliefs, and by documenting that different types of essentialist beliefs have distinct implications for prejudice. Third, I presented experimental work designed to examine the conditions that give rise to essentialist thinking about social categories. As Papers 1 and 2 documented that essentialist beliefs have important implications for prejudice, Paper 3 takes a critical next step by beginning to examine what triggers this type of thinking. Taken together, the findings of this dissertation have implications for the emergence of prejudice, as well as for the design of interventions to reduce bias and improve inter-group relations.

The first paper presented the development of a brief prejudice scale, and examined the relation between beliefs about genetic theories and prejudice across fifteen social categories. Results indicated that the implications for prejudice of lay theories of

category membership varied by how much stigma was believed to attach to category identity itself (instead of attaching to category-associated properties). In particular, the more that stigma was viewed as attaching to category membership itself, the more strongly believing that people choose to be category members related positively to prejudice. Also, as beliefs that prejudice exists because of beliefs that membership is inherently wrong decreased (a possible indication that stigma attaches to category-linked properties), the correlations between endorsement of beliefs that genes cause career/educational differences and prejudice increased. The expected pattern—that when stigma attaches to category membership, endorsement of genetic theories will relate to less prejudice—held only for groups based on sexuality.

One possible interpretation of these findings is that choice theories of category membership related to more prejudice, particularly for categories that are viewed as stigmatized because membership is viewed as inherently wrong. Alternately, genetic theories of associated properties (e.g., of achievement differences) relate to more prejudice, particular for categories that are viewed as stigmatized *because* of these associated properties. In future work, however, it will be important to directly measure beliefs that stigma attaches to associated properties, and to directly consider the possibility that some categories may be viewed as stigmatized *both* because category membership is viewed as inherently wrong, and because of associated properties.

The present findings are somewhat consistent with Prentice and Miller (2007) who proposed that the relation of genetic theories to prejudice varies depending on whether stigma attaches to membership (in which case genetic theories should relate to less prejudice) or to associated properties (in which case genetic theories should relate to

more prejudice). The present findings appear consistent with their proposal regarding associated properties, as genetic theories of achievement differences related to increased prejudice. However, the present findings suggest that the relation of lay theories of *category membership* to prejudice may be better understood in terms of beliefs about the role of choice, as opposed to focusing only on the role of beliefs about genetics (as genetic theories related to less prejudice only for categories based on sexual orientation, whereas choice theories related to prejudice more consistently across categories).

These findings highlight the need to include a wide-range of categories in tests of models of how essentialist beliefs relate to prejudice. Future work aiming to develop such theoretical models should also consider a range of possible causal theories (including both choice and genetics). Finally, future work should include careful measurement of the characteristics of categories that are thought to moderate the relation of lay theories to prejudice (e.g., the extent to which stigma is viewed as attaching to membership and to associated properties).

The second paper presented a meta-analysis focused specifically on beliefs about homosexuals to explore the relation between multiple essentialist beliefs (discreteness, universality, immutability) and prejudice. I found strong correlational evidence that the belief that heterosexuals and homosexuals form two discrete kinds relates to more prejudice, and that the belief that homosexuality is universal across time and culture relates to less prejudice. The largest quantity of research had examined the relation of prejudice to immutability-related beliefs, including beliefs about change, fixedness at an early age, the role of biology and genetics, and choice. Each belief related to prejudice in the expected direction: belief that homosexuality is stable, fixed at an early age, and

caused by biology related to less prejudice; whereas belief that homosexuality is a choice related to more prejudice. Importantly, I did not find differences in the magnitude of the relation across the specific immutability-related beliefs. Had some of the specific beliefs had stronger linkages with prejudice, these would potentially have been more promising targets for intervention research.

Both of the first two papers examined the relation between the belief that genes cause identity and prejudice. In both papers, there was a strong link between genetic beliefs about identity and prejudice – only for beliefs about homosexuals. Future work should examine why this link is so robust for beliefs about homosexuals and tenuous or non-existent for other groups. One possible explanation is that this relation is most prominently discussed in the media for homosexuals. Another possibility is that unlike other prejudices, some anti-gay prejudice may be due to a denial that homosexuality is a 'legitimate' category; thus, the belief that homosexuality has a biological basis may have a particularly important role in undermining such beliefs.

It is interesting to consider how the two additional essentialist beliefs that were explored in Paper 2 (universality and discreteness) might vary across the multiple categories explored in Paper 1. Although I did not assess beliefs about discreteness in Paper 1, participants were asked to rate the size of group differences in terms of personality and career/educational achievement. For all but two of the groups, there was a significant positive relation between prejudice and the belief that are large group differences in at least one of the domains. Because the belief that two groups have large differences in a key domain is likely a key component of the belief that two groups are two discrete kinds, this suggests that the positive relation found in Paper 2 between

discreteness and anti-gay prejudice may extend to a large number of other social categories.

I did not assess beliefs about universality in Paper 1, but it seems possible that the negative link between universality and prejudice found for groups based on sexual orientation in Paper 2 may not extend to other categories. Belief that homosexuality is universal across time and culture is positively related to the belief that homosexuality has a biological cause. This makes intuitive sense, as the more often a trait appears in nature, the more likely it is due to biology – which relates to less prejudice. In other words, universality may serve to justify the belief that homosexuality is an uncontrollable identity category. Consistent with this possibility, endorsement of universality beliefs about homosexuality were found to relate to less endorsement of beliefs that homosexuality is a choice. Somewhat surprisingly, we found that the belief that homosexuality is universal relates to less discreteness – which would lead to an additional negative path between universality and prejudice. This link would likely be positive for other groups for which genetic differences imply unique genetic histories – which is not the case for homosexuals.

Based on this logic, the belief that two ethnic groups have existed for most of history would likely accentuate the belief that genetics determine identity. According to Paper 1, this would not affect prejudice. However, finding out that the ethnic groups have distinct genetic histories would likely feed directly into a belief that the two ethnic groups are discrete (and have a large number of differences), likely leading to more prejudice.

An important implication of both of the first two papers is that there is a strong need for experimental work in order to identify the causal relations between essentialist

beliefs and prejudice. In the case of Paper 2, although a large number of studies have examined the correlation between essentialist beliefs and anti-gay prejudice, no studies have experimentally looked at the effect of manipulating discreteness or universality on prejudice, and only a limited number of studies, which often had methodological weaknesses, have examined the effect of manipulating beliefs about genetics. Experimental work is necessary to bridge the existing research with the development of strategies and real-world interventions to reduce anti-gay prejudice. Also, although many researchers implicitly assume that essentialist beliefs have a causal influence on prejudice, others have proposed that particular essentialist beliefs are selected by people in order to justify one's prejudice or lack thereof. It is also possible that essentialist beliefs and prejudice have a reciprocal causal relationship, such that essentialist beliefs help shape prejudice and prejudice helps shape essentialist beliefs. Experimental work is needed to examine these distinct possibilities; this work has the possibility to yield important insight into the origins of prejudice.

For Paper 1, similar experimental work is needed to examine whether changing beliefs about the role of genetics and choice can change prejudice for a number of other social categories. This work will serve similar roles as above – to bridge the correlational research with real-world interventions and to advance theory on the development of prejudice. Additional experimental work is also needed to pin down exactly why beliefs about genetics and choice relate to prejudice for some groups but not others. The results supported the hypothesis that the extent of the belief that stigma attaches to category identity (as opposed to category-linked properties) is a key moderator of the effect.

Experimental work is needed that manipulates the extent to which stigma against a novel group is described as attaching to category membership vs. associated properties.

The first two papers demonstrated that essentialist beliefs have important implications for prejudice. Thus, it is important to examine what factors lead people to essentialize particular groups; however, very little research has examined this topic. To address this gap, the third paper employed an experimental design to examine the conditions under which people construct an essentialist understanding of a new category, with the goal of identifying the types of information and contexts that trigger essentialist thinking about social identity groups.

Results indicated fairly high levels of essentialist thinking in this experiment. Participants were told scenarios in which a baby was born to parents from one novel social group, but raised by parents from another group. Although participants understood that the baby had no social contact with the birth-parents, or anyone from the social identity group of the birth parents, over 50% of participants still thought that the child would develop the social identity category of the birth parents. This suggests that many participants viewed social identities as conferred through processes that occur before birth, and expect such identities to be constant across time and contexts, consistent with essentialism.

In this study, I manipulated two factors that I expected to influence essentialist thinking about social identity. First, I described the two social groups as either genetically similar or genetically distinct, with the hypothesis that describing the two social groups as genetically distinct would increase essentialist thinking. Although this manipulation did not influence predictions about social identity, this manipulation did influence the extent

of essentialist thinking about behavior. For example, participants expected the character to feel more bonded to the social identity of the birth-parents, and less bonded to the social identity of the adoptive-parents, when the populations were described as genetically distinct. Thus, this finding supports the hypothesis that learning that social groups are genetically distinct increases essentialist thinking.

For the second manipulation, the two social groups were either described as engaged in conflict, or as not engaged in conflict. I hypothesized that describing the groups as engaged in conflict would *decrease* essentialist thinking, by triggering another form of social reasoning in which identity is viewed as determined by membership in cooperative groups (which would thus favor the identity of the adoptive-parents). However, although there was some limited evidence that the presence of social conflict led participants to believe that the character would engage in more activities to support the adoptive social group, overall, results were contrary to hypotheses. Indeed, the most consistent finding related to this manipulation was that the presence of social conflict actually *increased* essentialist thinking, when the two groups were also described as genetically distinct. For example, when the groups were described as genetically-distinct and social conflict was present, participants judged the character as *less* likely to have the identity of the adoptive-social group, as well as less likely to engage in the cultural practices of this community. Thus, these findings suggest that information about social conflict may also trigger essentialist thinking about identity and behavior.

Very little previous work has experimentally examined the conditions that foster essentialist thinking about new social categories. The findings from the present work, which suggest that information about genetic distinctiveness and social conflict can

trigger essentialist thinking, should be replicated in future work, using multiple methods. Additionally, more types of information should be tested, such as linguistic features, as well as information about status or power differences. Finally, as the present work did not successfully identify factors that *reduce* essentialist thinking, this remains an important area for future work.

The development of a comprehensive model of the emergence of prejudice, which includes specification of what types of information and contexts promote essentialist thinking, as well as the implications of essentialism for prejudice across categories, remains an important goal for social psychologists. Such a model would contribute to our understanding of the social-cognitive underpinnings of attitude formation more generally. Perhaps more important, such a model would enable the application of research, through the design of effective interventions to reduce prejudice and improve inter-group relations.

Appendix

Story intro, genetic differences:

There are two islands, Oak-island and Maple-island. The people that live on these islands are called Oakers and Mapletons. For hundreds of years, Oakers have lived on Oak-island, and Mapletons have lived on Maple-island. Oakers and Mapletons look similar to each other, but they have many genetic differences. For example, many Oakers have a genetic predisposition to easily absorb calcium, so they have very strong bones. Mapletons, on the other hand, have a genetic predisposition to readily absorb vitamin A, and so have exceptionally good eyesight. Oakers also appear to have genes that make them more likely to get liver cancer, whereas Mapletons are genetically prone to kidney cancer. The communities on these islands are independent, each has its own businesses, schools, and government; people generally do not find reasons to leave their islands.

Story intro, genetic similarities

There are two islands, Oak-island and Maple-island. The people that live on these islands are called Oakers and Mapletons. For hundreds of years, Oakers have lived on Oak-island, and Mapletons have lived on Maple-island. Oakers and Mapletons look similar to each other, and they have many genetic similarities. For example, many Oakers and Mapletons have genetic predispositions to easily absorb calcium, so they have very strong bones. Some also have a genetic predisposition to readily absorb vitamin A, and so have exceptionally good eyesight. Oakers and Mapletons, however, also appear to have genes that make them more likely to get liver and kidney cancers. The communities on

these islands are independent, each has its own businesses, schools, and government; people generally do not find reasons to leave their islands.

Coalition Condition

For many generations, Oakers and Mapletons have had a great deal of conflict with each other. The government on the mainland periodically threatens to destroy one of the two island communities, to make room for an industrial development project. This threat, which has been hanging over the islands for as long as anyone can remember, has led to a great deal of conflict between Oakers and Mapletons, as each community wants to make sure that it is the other community, instead of their own, that is eventually destroyed. Mapletons and Oakers are all involved in this conflict. Children work hard to raise money, to write letters, and to make posters. Children are often seen wearing their "Save Maple-island" t-shirts, or "Save Oak-island" t-shirts, and have written chants insulting the other island, which they sing at school. Older children on each island often discuss wanting to go to the other island to vandalize it, though no child has ever actually gotten to the other island to follow through on these plans. Meanwhile, adults meet with (and bribe) government officials, write editorials in the newspaper, and neglect their own jobs to focus on their work to save their communities.

Culture Condition

For many generations, Oakers and Mapletons have had many cultural differences. Oakers practice a religion known as Puru, which focuses on spirituality in nature, and involves following a vegetarian diet, holding religious ceremonies in the woods, and includes a particular code of ethics that focuses on equality. Mapletons, on the other hand, practice a religion called Frulee, which focuses on worship of a powerful deity, and involves

learning to read ancient texts, building large ornate churches, and includes a particular code of ethics that focuses on respect for authority. These cultural and religious traditions are very meaningful for the people on each island, and people actively participate in them from a very young age. Children on Oak-island spend a lot of time in nature, help to grow organic vegetables, and are taught to share with each other and to work together to solve problems. Children on Maple-island learn to read ancient languages, work on the construction of the elaborate churches, and are taught to show obedience to all authority figures. Although people from these islands never visit each other, the communities on each island are aware of the cultural differences between them, and often discuss their own community's wisdom, and the bizarre practices that the people on the other island engage in.

Adoption scenario

One day, two parents from Oak-island were going to have a baby. They could not take care of the baby themselves, so they took a boat, went to the mainland, and went to an adoption center. They had the baby, and then they left, and moved some place far away. The next day, two parents from Maple-island came to the center and adopted the baby. They were not told anything about the baby's parents, or where they were from. The baby grew up on Maple-island with his adoptive parents. He was very much accepted by his adoptive family and the Mapletons, and had a happy childhood. The conflict [cultural differences] between Mapletons and Oakers continued, and the boy never went to or met anyone from Oak-island.