

ESSENTIALIST BELIEFS ABOUT HOMOSEXUALITY: STRUCTURE AND  
IMPLICATIONS FOR PREJUDICE – A REPLICATION OF  
HASLAM AND LEVY, 2006

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Kristin Nicole Raley

Certificate of Approval:

---

Christopher Correia  
Associate Professor  
Psychology

---

Roger K. Blashfield, chair  
Professor  
Psychology

---

Jeffrey S. Katz  
Associate Professor  
Psychology

---

Joe F. Pittman  
Interim Dean  
Graduate School

ESSENTIALIST BELIEFS ABOUT HOMOSEXUALITY: STRUCTURE AND  
IMPLICATIONS FOR PREJUDICE – A REPLICATION OF  
HASLAM AND LEVY, 2006

Kristin Nicole Raley

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THESIS ABSTRACT

ESSENTIALIST BELIEFS ABOUT HOMOSEXUALITY: STRUCTURE AND  
IMPLICATIONS FOR PREJUDICE – A REPLICATION OF  
HASLAM AND LEVY, 2006

Kristin Nicole Raley

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Past studies have indicated that essentialist beliefs are associated with prejudicial attitudes. In this study, 300 Auburn University undergraduates responded to measures assessing the degree to which participants ascribed to essentialist beliefs about homosexuals, their attitudes toward homosexuals, and their degree of religious fundamentalism. Results indicated that there are three factors comprising essentialist beliefs about homosexuals. In addition, two of these factors showed a negative correlation with antigay attitudes while the third factor was positively correlated with antigay attitudes. Essentialist beliefs accounted for variance in antigay attitudes beyond that accounted for by religious fundamentalism.

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## TABLE OF CONTENTS

LIST OF TABLES	ix
CHAPTER 1. LITERATURE REVIEW	
Essentialism	2
Essentialism and Classification	4
Essentialism and Social Categories	5
Essentialism, Stereotypes and Prejudice	8
Essentialism and Homosexuality	10
Goals of the Current Study	14
CHAPTER 2: STUDY	
Methods	
Participants	16
Measures	17
Procedure	19
Results	
Goal # 1: Replication of Haslam and Levy (2006)	20
Goal # 2: Extension	24
Goal # 3: Essentialist Beliefs and Antigay Attitudes	29
Goal # 4: Religious Fundamentalism	32
Discussion	33

REFERENCES	43
APPENDIX A – Measures	47

## LIST OF TABLES

Table 1.	Means and Standard Deviations for Variations in Order of Presentation	20
Table 2.	Demographic Comparisons Between Haslam and Levy (2006) and the Current Study	21
Table 3.	Two Factor Solution Loadings for Original Seven Haslam and Levy (2006) Items	22
Table 4.	Three Factor Solution Loadings for Original Seven Haslam and Levy (2006) Items	23
Table 5.	Comparisons of Responses to Original Seven EBS Items	24
Table 6.	Factor Loadings for the Rotated Three Factor Solution	25
Table 7.	Factor Loadings for Rotated Two Factor Solution	27
Table 8.	Responses to male-specific and female-specific items by gender	29
Table 9.	Correlations among Scales	30
Table 10.	Responses to ATL and ATG by Gender	31
Table 11.	Hierarchical Regression Predicting Attitudes	32
Table 12.	Stepwise Regression Predicting Attitudes	33

## CHAPTER 1

### LITERATURE REVIEW

As humans, we organize our worlds by categorizing the phenomena of everyday experience. The use of categorization aids us in understanding and predicting behavior. The concepts or entities placed within a particular category are often grouped together based on some perceived similarity. The classical view of concepts asserts that the members of a category share some characteristic or set of characteristics, and these commonalities designate membership to one category or another (Medin, 1989). Medin and Ortony (1989) coined the term “psychological essentialism” to refer to a conceptual framework commonly used to determine the nature of particular categories and category membership. Research suggests that people who use this framework to conceptualize social categories (e.g., race, religion, sexual orientation) tend to endorse more stereotypic beliefs related to those categories (Haslam, Rothschild, & Ernst, 2000; Haslam, Rothschild, & Ernst, 2002; Yzerbyt & Rocher, 2002).

A discussion of psychological essentialism must begin with an explanation of essentialism as the Aristotelian philosopher might describe it. The use of essentialist heuristics in categorization then provides the background for psychological essentialism as it applies to various socially constructed categories. Psychological essentialism can be used to explain conceptualizations of social categories, mental disorders, and stereotypes

and prejudice. A discussion of essentialist beliefs as they apply to beliefs about sexuality is warranted due to the apparently unique relationship between the elements of essentialist thinking and attitudes toward homosexuals. Integral to this discussion is the structure of essentialist beliefs about homosexuality, as research has been inconclusive as to the factors that comprise these beliefs (see Hegarty & Pratto, 2001 and Bastian & Levy, 2006).

### *Essentialism*

The idea of causal essences dates back to early philosophers. Aristotle is considered the first philosopher to attempt to delineate a system for classification, and he was interested in the cause of the very existence of things in the world. According to Aristotle's view, there are four causes that make an entity what it is. The material cause is the physical, perceptible quality of the thing. For example, in the case of a human being, the material cause is the body. The formal cause refers to the essence that makes something what it is, e.g., the "circleness" of a circle, and this is the concept that is the basis of essentialism. The efficient cause refers to those external events that act on the being, thereby compelling the being to fully exist. The final cause is the end towards which the being naturally progresses (Sachs, 1995). The concept of the formal cause is the basis of what is now considered Aristotelian essentialism. An object's essence is the inherent, underlying substance that causes other properties to appear that are typical of the category to which that object belongs (Gelman, 2003). Aristotle's definition of causality was an explanation of why the natural world is as it is (i.e., a metaphysical explanation). Essentialism grew out of Aristotle's idea that categories of entities share underlying essences, which operate to distinguish between groups. To Aristotelians, the

essence of a being is always the same, and there can be no overlap. In the Aristotelian classification of biological species, an organism could not belong to more than one category because that would be a contradiction to the concept of the underlying essence that gives a bear its “bearness” and a fish its “fishness.” An Aristotelian classification system would assert that categories are discrete, immutable, universal, and highly informative about their members.

Aristotle’s metaphysical view asserts that the essence makes a thing what it is, and to change the essence would be to change the nature of the entity. Essentialism, in this philosophical sense, is an ontological definition of individual entities (i.e., the way all things actually are), and the essentialist’s argument is that all entities must have innate essences. Psychological essentialism refers to the common tendency to conceptualize certain categories as possessing inherent qualities (i.e., the way people think some things are), but not all categories are “essentialized” (Gelman, 2003). When organisms or chemicals are classified based on underlying essences, these categories are often termed “natural kinds.” These categories are believed to be created by the world, not products of human conceptualization. Underlying structures, or essences, are thought to be discoverable through scientific analysis. Objects within these categories are more likely to be viewed as possessing inherent essences than artifactual objects. For example, children hold that a tiger maintains its “tigerness” when disguised to look like a lion. On the other hand, a coffeepot that is used as a birdfeeder does not maintain its coffeepot essence (Rothschild & Haslam, 2003). Kalish (2002) assessed the degree to which a variety of categories were thought of in essentialist terms. His conclusion was that

relatively few categories have essentialist structure, and biological categories were more likely to be thought of in essentialist terms than non-biological categories.

### *Essentialism and Classification*

In studying essentialist beliefs in children, Gelman (2003) looked at the degree to which inferences are drawn based on category membership. She found that young children's category based inductions are consistent with essentialist beliefs in two ways. The characteristics that children infer across category members often refer to invisible, internal functions and features. That is, children infer similarities between category members that cannot be seen. Also, children make assumptions pertaining to category membership even when perceivable stimuli are present and in competition with their assumptions. This finding suggests that, even for children under the age of five, properties that are not obvious or perceptible are important in their decisions about category members. When told that two objects are members of the same category, young children will assume that those objects have something in common, even if they cannot perceive the actual similarity.

Psychological essentialism extends to categories that, while perhaps thought of as natural, are actually artifacts of human socialization. When applying the concept of underlying essences to social categories, these categories may become viewed as separate species. The socialization process in which humans participate creates categories into which other humans are placed. Social categories are used to understand and predict behavior. Unfortunately, in the case of social categories, these predictions are often based on stereotypes that may or may not hold true for any individual member of that category.

The application of these stereotypes as a basis for making decisions about an individual can result in prejudice.

### *Essentialism and Social Categories*

Allport (1954) suggested that people who are prejudiced tend to perceive human social groups as immutable and discrete. He argued further that prejudiced attitudes are often accompanied by a “belief in essence” (i.e., there are common, underlying features that pervade throughout all members of a group). Rothbart and Taylor (1992) postulated that people commonly perceive social categories in the same way that they perceive other categories, such as vegetable, mineral or animal (i.e., as “natural kinds”) rather than as artifacts of environmental situations. They further posited that there are two components of conceptualizing social categories as natural kinds: inalterability and inductive potential. Yzerbyt, Rocher, and Schadron (1997) outlined five central features that define essentialist social categorization. First, from an essentialist point of view, social categories have a *specific ontological status*, i.e., category members are believed to have a common essential feature. Second, membership in a particular social category is *immutable*. Third, the knowledge that an entity is a member of a category provides a wealth of information about that entity; that is, essentialist social categories have *inductive potential*. Fourth, different characteristics of category members are somehow interconnected via a *unifying theme*. Fifth, categorization based on underlying essences is *exclusive*; members of one category cannot belong to another category. Yzerbyt et al. (1997) went on to argue that essentialist beliefs serve to rationalize the inequalities between social groups. The belief that there is something inherently different between groups may make it more acceptable to treat members of other groups differently.

Essentialist beliefs may serve to protect the status quo for the dominant social groups and preserve the second-class citizen status of many minority groups.

Haslam, Rothschild, and Ernst (2000) looked at the relationship between essentialist beliefs and social categorization, and they investigated the degree to which various groups were essentialized. They developed a set of 40 social categories based on 20 domains. The domains included gender, race, religion, and sexuality as well as interests, dietary groups, and political affiliations. In each domain there were two categories. Participants rated sets of 20 categories, i.e., one category from each domain, on nine elements of essentialism: discreteness, uniformity, informativeness, naturalness, immutability, stability, inherence, necessity, and exclusivity. The *discreteness* of a category refers to the category having sharp boundaries with no overlap. *Uniformity* is the degree to which members of that category are viewed as being the same. *Informativeness* concerns the inductive potential of category membership. *Naturalness* refers to whether the category exists in nature or is artificial. *Immutability* looks at the static vs. dynamic nature of category membership. *Stability* is concerned with the historical invariance of that category over time. *Inherence* is the degree to which a category has an underlying reality, or sameness. *Necessity* focuses on the presence of necessary features, without which one could not be a category member. Finally, *exclusivity* measures the extent to which belonging to a particular category excludes someone from belonging to other categories. The mean ratings of the 40 categories represented estimates of the degree to which essentialist beliefs about that category were held. Haslam et al. found that essentialist elements were endorsed more for some categories than for others. Also, the structure of essentialist beliefs could be characterized as comprised of two factors: a

*natural kinds* factor (factor loadings range from .78 to .91), which is comprised of the necessity, stability, immutability, naturalness, and discreteness elements, and an *entitativity* factor (factor loadings range from .73 to .90), which includes the exclusivity, inherence, informativeness, and uniformity elements. The *natural kind* factor was best represented by ethnic, gender, and racial categories. The *entitativity* factor was typified by homosexuality, Jews, and political groups.

Research on gender has shown strong evidence for psychological essentialist thinking in this domain (e.g., Prentice & Miller, 2006). Starting in the preschool years, children learn to make important inferences about personality, interests, and abilities based on gender (see Gelman, Collman, & Maccoby, 1986). Young children often believe that infants possess the sociological traits associated with their gender categories, regardless of the environment in which the child is raised. That is, young children are likely to believe that a baby girl will want to play with traditionally female toys, even if that girl is raised in an environment of all boys (Taylor, 1996). Since essentialized categories are considered to have strong inductive potential, and since gender is often a highly essentialized category (see also Haslam, Rothschild, & Ernst, 2000), knowledge of a person's gender is expected to provide a great deal of information about that person. If women share an underlying essence that serves as the basis for the common surface features readily observed, then it may be assumed that any woman is a representative of the entire category of women. When males and females differ on a trait, this difference will often be attributed to the underlying essence differentiating males and females. Take, for instance, the widely publicized remarks of former Harvard president Lawrence Summers concerning women in sciences. He attributed the lack of women in math and

science fields to innate differences between males and females. While this remark angered both men and women alike, it is a common social occurrence to attribute sociological differences to biological or essential underpinnings.

Ahn, Flanagan, Marsh, and Sanislow (2006) investigated the degree to which people believe mental disorders to have real, underlying essences. Their participants included both novices (undergraduates) and professionals (clinicians). Participants were asked to rate various mental disorders, some familiar and some unfamiliar, on nine essential elements. Participants also rated a selection of medical disorders, some familiar and some unfamiliar, on the same nine elements. Their results indicate that both novices and professionals held stronger essentialist beliefs about medical disorders than about mental disorders. Participants did not endorse the proposition that mental disorders are real and natural. Mental health professionals were also less willing than novices to endorse the idea that there is a shared, underlying cause of a mental disorder and that removal of that cause is necessary to cure the disorder. These findings are particularly interesting given the long-standing debates concerning the medical model of mental disorders. These results suggest that people believe there is more to mental disorders than biology.

#### *Essentialism, Stereotypes, and Prejudice*

In recent years, social psychologists have begun investigating the relationship between essentialist beliefs, stereotyping and prejudice (e.g., Haslam, Rothschild, & Ernst, 2002; Keller, 2005; Yzerbyt & Rocher, 2002). Research suggests that when people view a social category in the same way they view a natural category, and therefore hold it to be true that the category has an inherent, underlying basis, is highly informative about

the individuals that comprise it, homogeneous, and determines the identity of its members, that social category is often highly stigmatized (Haslam et al., 2000). When one holds these beliefs to be true, socially constructed groups are seen as meaningful entities, and the members of these groups are understood to have deeply rooted commonalities. By committing this reification fallacy, a hypothetical, abstract concept is treated as concrete and rooted in reality. It is often overlooked that social categories change over time, vary among different cultures, and are highly ambiguous (Haslam et al., 2002). When viewed from an essentialist perspective, the separation of individuals into social categories is not a product of the socialization process; rather, it is the existence of the underlying essence(s) inherent in all members of the group that creates these splits.

To further investigate Allport's (1954) claim that a belief in essence underlies prejudiced attitudes, Haslam, et al. (2002) studied the degree to which essentialist beliefs are associated with prejudice. Specifically, they looked at attitudes toward African Americans, women, and homosexual men. Their results indicate that certain elements of essentialism do correlate with prejudice, but the correlations vary in strength depending on the category under investigation. Also, an interesting finding of this study was that anti-gay attitudes were correlated with a mix of essentialist and anti-essentialist beliefs. That is, anti-gay prejudice appeared more prevalent in those who believed homosexuality to be discrete and inductively potent (essentialist beliefs); however, those with strong anti-gay attitudes also believed homosexuality to be non-natural, and mutable (anti-essentialist beliefs). These findings suggest that anti-gay attitudes are more positively correlated with the *entitativity* factor of essentialist beliefs and negatively correlated with

the *natural kinds* factor. Haslam et al.'s results indicate that the relationship between essentialist beliefs and prejudice is complicated, and different kinds of prejudices may have different associations with essentialist thinking.

### *Essentialism and Homosexuality*

Haslam et al.'s (2002) findings concerning the mixed correlations between components of essentialist beliefs and antigay attitudes supported the work of Hegarty and Pratto (2001), who specifically investigated the role of beliefs about homosexuality in predicting anti-gay attitudes. In their study, two dimensions of beliefs about homosexuality were observed: the immutability of sexual orientation and the fundamentality of categorizing a person as either homosexual or heterosexual. The immutability dimension refers to whether sexuality is biologically determined or freely chosen. Other researchers (e.g., Herek & Capitano, 1995) have found that participants who believed homosexuality to be a biological trait that could not be willfully changed were more tolerant than those participants who believed that being homosexual is something that a person can choose. Hegarty and Pratto (2001) found that belief in the immutability of sexual orientation was negatively correlated with anti-gay attitudes. On the other hand, endorsement of the fundamentality of homosexuality was positively correlated with anti-gay attitudes. The fundamentality dimension refers to the belief that there is something fundamentally different about homosexuals as compared to heterosexuals. The two belief dimensions (i.e., immutability and fundamentality) were negatively correlated with each other. This study lends additional support to the idea that the relationship between essentialist beliefs and prejudice, especially anti-gay prejudice, is not clear-cut. Given the current political interest in issues of sexuality and the debates

over the biological bases of sexual orientation, further investigation into this particular domain of social categories is warranted.

Haslam and Levy (2006) conducted three studies to further understand the structure of essentialist beliefs and the relationship between essentialist beliefs and attitudes toward homosexuality. In the first of these studies, they attempted to clarify the structure of essentialist beliefs about homosexuality. Contrary to past research that suggested a two-factor model, Haslam and Levy found that three distinct dimensions better characterized essentialist beliefs about male homosexuality. They replicated the immutability and fundamentality factors previously found by Hegarty and Pratto (2001), and found an additional factor, which they termed “universality.” The universality factor is important because the historical invariance and existence of homosexuality across cultures has been a topic of debate in scholarship on homosexuality. Haslam and Levy (2006) argued that the evidence for this third factor is stronger than the evidence for a two dimensional model found in previous research for two reasons. First, the sample size was much larger than in previous studies (N=309). Second, in this study participants were asked about cross-cultural universality, not just historical invariance. There were considerable methodological issues in Haslam and Levy’s study. First, the new third factor that Haslam and Levy (2006) found, universality, is comprised of items specifically added to tap into this domain. It appears that this third factor may have been surreptitiously added based on the author’s assumptions that this factor exists. In addition, the scale used to measure essentialist beliefs contained only seven items, one for each of seven elements of essentialist beliefs. Since, in factor analysis, a factor is a group of items that correlate highly with each other, a three factor structure from a seven item

scale is questionable. Two of the three factors are actually just pairs of items. Also, the correlation matrix obtained in this study did not indicate strong correlations among items with the highest correlation between any two items equal to .39. The three factor structure that Haslam and Levy (2006) argue better explains essentialist beliefs about homosexuality than the two factor structure Hegarty and Pratto (2001) found may not be practically meaningful.

The second study in this series used confirmatory factor analysis to provide further evidence for the three factor structure found in the first study. Also, the second study looked at essentialist beliefs about both gay men and lesbians, whereas the first study concentrated on homosexual males only. Finally, the second study compared essentialist beliefs to anti-gay attitudes. The researchers hypothesized that the new universality factor would predict anti-gay attitudes independently of the immutability and fundamentality factors established in previous studies. They predicted that, as found in previous studies, immutability would be negatively associated with anti-gay attitudes and fundamentality (or discreteness) would be positively associated with anti-gay attitudes. This second study confirmed the three factor model of essentialist beliefs about homosexuality; however, the correlation matrix obtained was again unimpressive with the highest correlation between any two items being .44. The authors also found that the immutability factor had a moderate negative association with anti-gay and anti-lesbian attitudes (both  $r_s = -.29$ ). The universality factor also had a moderate negative correlation with anti-gay and anti-lesbian attitudes ( $r_s = -.27$  and  $-.32$ , respectively). The fundamentality factor (discreteness) was positively associated with anti-gay and anti-lesbian attitudes ( $r_s = .37$  and  $.29$ , respectively).

Haslam and Levy's third study extended their findings to a community sample (N=230). In this study, the authors expanded their essentialist belief scale from seven items to 15 items. This study also took into account other predictors of anti-gay attitudes, such as right-wing authoritarianism, social dominance orientation, and political conservatism. Right wing authoritarianism (RWA) was measured using a 28 item scale developed by Altemeyer (1988), which was scored using a 9-point scale (-4 = *very strongly disagree* to 4 = *very highly agree*) with higher scores indicating more authoritarianism. Social dominance orientation (SDO) and political conservatism measures were adapted from Pratto, Sidanius, Stallworth, and Malle (1994). SDO was measured with a 16 item scale scored using a 7-point scale (-3 = *very negative* to 3 = *very positive*). Higher scores indicated greater agreement with SDO. On the political conservatism scale, the participants rated their political views toward each of the three issues (foreign policy, economic, social) on a 7-point scale (1 = very liberal, 2 = liberal, 3 = slightly liberal, 4 = middle of the road, 5 = slightly conservative, 6 = conservative, 7 = very conservative). Their responses were summed such that a high score indicated greater conservatism. By taking into account these additional variables, the role of the conceptual structure of homosexuality (i.e., essentialist vs. non-essentialist) could be better examined. The authors stated that the results of this study confirm the three factor structure of essentialist beliefs found in the two previous studies. They asserted essentialist beliefs do predict anti-gay attitudes independent of other variables. However, it is interesting to note that when additional items were added so that the scale would have five items expected to load on each of the three factors, the factor structure was less clear. Items expected to load on the proposed universality factor actually loaded on the

other two factors. In addition, the immutability and discreteness factors were significant predictors of antigay attitudes but the universality factor was not. Also, of the additional variables added in this study, right-wing authoritarianism was the only significant predictor of antigay attitudes. The findings of these three studies are quite inconclusive.

#### *Goals of the Current Study*

The first goal of the present study was to replicate the first of Haslam and Levy's (2006) studies. The two samples differed geographically – Haslam and Levy conducted their studies at a large Northeastern university, and the current study took place at a large Southeastern university. Differences in demographic characteristics were also explored to determine the extent of the disparity between the two samples. The replication portion of this study took place at two levels: a) examining the factor structure obtained from the seven items Haslam and Levy used, and b) comparing responses to these seven items between the two samples. It was of interest to the investigators whether Haslam and Levy's results would replicate in a new sample.

The second goal of this study was to extend Haslam and Levy's findings by adding items to their seven-item scale and analyzing the factor structure of this elaborated measure in an effort to further explore the complicated construct of essentialism, and the dimensions comprising this concept, as applied to homosexuality. In addition, the breadth of the scale was increased by including items referring to lesbians, and whether responses differed as a function of the gender to which the item referred was examined.

The third goal of this study was to explore attitudes toward lesbians and gays and their relationship to essentialist beliefs. Past studies (Haslam et al., 2002; Haslam & Levy, 2006; Hegarty & Pratto, 2001) have suggested that the subconcepts that comprise

essentialist beliefs each have unique associations with antigay attitudes. Further, it is hypothesized that attitudes toward gay men differ from attitudes toward lesbians, and participant gender may interact with these effects.

The fourth and final goal of this study was to determine the degree to which essentialist beliefs predict antigay attitudes beyond those accounted for by a well-documented variable shown to be important in predicting these attitudes: religious fundamentalism. The literature suggests that there is a strong positive association between level of religious fundamentalism and antigay attitudes (e.g., Johnson, Brems, & Alford-Keating, 1997; Olson, Cadge, & Harrison, 2006; Schulte & Battle, 2004; Schwartz & Lindley, 2005). The cultural climate of the area in which this study took place has been reputed to be especially religious as compared to the location in which Haslam and Levy conducted their studies; therefore, it seemed important to examine this variable.

## CHAPTER 2

### STUDY

#### Method

##### *Participants*

Participants in this study were 300 Auburn University undergraduates enrolled in psychology courses during the fall 2007 semester. Thirty participants were dropped due to missing data on one or more of the measures. In addition, a validity scale was constructed using five pairs of items on the Essentialist Beliefs Scale (EBS) designed to detect inconsistent responding. For example, one item was worded “Male homosexuality probably only exists in certain cultures,” and its paired validity item was worded “Male homosexuality probably exists in all cultures.” The sum of the differences in responses between each pair of items (after appropriate reverse scoring) was calculated, and participants with sums greater than nine were dropped (11 participants). This cutoff point was chosen by looking at the distribution of validity scores and deciding at which point higher scores became infrequent. Of the 259 participants whose data was retained, 200 (77.2%) were female, 56 (21.6%) were male, and three participants did not report gender. The mean age of participants was 20.11 (SD=1.78) with a median age of 19 (IQR = 19-21). The sample was predominantly Caucasian (217), but was also comprised of 25 African American, 6 Hispanic, 2 Asian American, and 6 multi-racial individuals. Two participants reported their race as “other.”

## *Measures*

*Demographic Information.* Participants were asked to provide information regarding their age, gender, description of home-town (i.e., rural, suburban, or urban), ethnicity, major, approximate grade average, year in school, religious affiliation, and perceived degree of religiosity. In order to keep participants' data anonymous, identifying information was not collected.

*Essentialist Beliefs.* The measure of essentialist beliefs is an adapted version of the EBS developed by Haslam et al. (2000, 2002). This measure was originally designed for use in determining the degree to which participants "essentialized" social categories (e.g., Jews, African Americans, liberals). The original version of this measure (EBS<sub>1</sub>) included nine items that addressed the elements of essentialism that have been cited in social scientific writing on the subject. The adapted version (EBS<sub>2</sub>) used by Haslam and Levy (2006) was altered to refer specifically to homosexual males and to address elements of essentialism that were not covered in the original version. The EBS<sub>2</sub> tapped into seven elements of essentialism: biological basis, immutability, fixity, discreteness, defining features, historical invariance, and universality.

The EBS<sub>2</sub> only contained seven items. Seven items are insufficient in number to examine the three factor structure that Haslam and Levy believed is present in essentialist beliefs about homosexuality. Therefore, 18 items written by the principal investigator were added to the scale (EBS<sub>3</sub>). These include two new items for all of the seven elements except fixity, which is represented by one additional item, and five items that served as validity items. Also, since the seven items of the EBS<sub>2</sub> refer specifically to male homosexuality, and this study is interested in attitudes toward homosexuality in general,

eight of the new 18 items refer specifically to female homosexuality. See Appendix A for a list of Haslam and Levy's items and the items added in this thesis. Participants rated each of the 25 items on a six-point Likert scale from 1 (very strongly agree) to 6 (very strongly disagree).

*Attitudes about homosexuality.* To assess participants' levels of antigay attitudes, the Attitudes to Lesbians and Gay Men Scale (ATLG; Herek, 1988) was used. This 20-item measure, presented in Appendix A, contains two subscales with ten items related to attitudes towards gay men (ATG) and ten items that assess attitudes toward lesbians (ATL). This measure was scored using a nine-point Likert scale (-4 = strongly disagree, 4 = strongly agree). Scores for the two subscales can be computed separately or combined to yield a total antigay attitudes score with higher scores indicating more negative attitudes. In an ethnically diverse sample of undergraduate students at a large Northeastern university, the two subscales were shown to have good internal consistency with  $\alpha = .93$  and  $.91$  for ATG and ATL, respectively (Haslam & Levy, 2006). Previous research with undergraduates has also demonstrated that the ATLG scale as a whole has a satisfactory level of internal consistency with  $\alpha = .90$  (Herek, 1988). In the current study, internal consistencies for both subscales were high with  $\alpha = .95$  and  $.94$  for the ATG and ATL, respectively, and the total scale also showed good internal consistency ( $\alpha = .97$ ).

*Religious Fundamentalism.* To measure participants' beliefs about religion, this study used the Religious Fundamentalism Scale (Altemeyer & Hunsberger, 2004). This 12-item scale, presented in Appendix A, is a shortened version of its 20-item counterpart, developed by Altemeyer and Hunsberger in 1992. This scale is intended to measure: (a) the degree to which one ascribes to the belief that there is one religious doctrine, which

holds the fundamental, infallible truth concerning humanity and divine being(s); (b) that this religious truth is inherently good and therefore opposes all that is evil; (c) that the tenets of this religion are inalterable and must be followed today just as they were followed in the past; and (d) that those who follow the true religion will be “blessed” by the deity (Altemeyer & Hunsberger, 1992). In a large sample of Canadian undergraduates, this scale demonstrated acceptable internal consistency ( $\alpha = .91$ ; Altemeyer & Hunsberger, 2004). The internal consistency for this scale in the current study was  $\alpha = .95$ .

### *Procedures*

Participants responded to questionnaires online. The online format was chosen because it was believed that it might help protect individuals from any social discomfort they would experience in answering questions of a sensitive nature in the presence of a researcher. Before beginning the online surveys, participants first viewed an informed consent statement describing the study and any potential risks involved in participation. Participants were given the option to accept or decline, and, if they chose to accept, they continued with the study. Scales were presented one at a time, and to determine if order effects were a threat to the validity of this study, three variations in the order of presentation of the scales were implemented. Demographic information was solicited last in each case to maintain consistency with Haslam and Levy's (2006) study. For each different order variation, a different scale (i.e., EBS<sub>3</sub>, ATLG, or RF) was presented first. The study was available online with the measures in a particular order (e.g., ATLG, RFS, EBS<sub>3</sub>, demographics) for a limited amount of time (approximately 72 hours). After the 72

hour time span had passed, the study was removed and replaced with the measures in a different order (e.g., EBS<sub>3</sub>, ATLG, RFS, demographics).

## Results

### *Order Effects*

A series of one-way analyses of variance were conducted to test whether the order of presentation of the measures affected responding; the results are presented below.

Since, for each measure, there was not a significant difference in responding based on the order in which the measures were presented, data from the different orders were combined.

Table 1: Means and Standard Deviations for Variations in Order of Presentation

		Measures		
		EBS <sup>a</sup>	ATLG <sup>b</sup>	RF <sup>c</sup>
Order 1	Mean	97.69	88.52	5.18
	SD	13.10	46.28	26.83
	N	81	81	80
Order 2	Mean	95.03	91.88	10.53
	SD	12.70	43.01	25.07
	N	75	77	75
Order 3	Mean	93.52	96.72	5.03
	SD	12.64	45.75	28.71
	N	62	61	62

Note: <sup>a</sup>  $F(2,215) = 1.97, ns$ ; <sup>b</sup>  $F(2,216) = .58, ns$ ; <sup>c</sup>  $F(2,214) = 1.01, ns$

### *Goal #1: Replication of Haslam and Levy (2006)*

#### *Demographics*

Since this is a replication of Haslam and Levy's (2006) study, analyses were conducted to compare the demographics of this sample with Haslam and Levy's. Results of these analyses are reported in Table 2 and indicate significant differences between

Haslam and Levy’s sample and the current sample in gender, race, and age. The difference in age may be due to the large sample sizes rather than a meaningful difference, as suggested by its low effect size (Cohen’s  $d = .27$ ).

Table 2: Demographic Comparisons Between Haslam and Levy (2006) and the Current Study

		Haslam and Levy (2006)	Current Study
Gender <sup>a</sup>	Male	145	56
	Female	164	200
Race <sup>b</sup>	Caucasian	102	217
	African American	46	25
	Latino	28	7
	Asian	80	2
	Other	50	6
Age <sup>c</sup>		M = 19.30	M = 20.11
		SD = 3.70	SD = 1.78

Note: <sup>a</sup>  $\chi^2(1) = 38.33, p < .001$ ; <sup>b</sup>  $\chi^2(4) = 166.03, p < .001$ ; <sup>c</sup>  $t(566) = -3.24, p < .01$

Although participants in the current study differed from those in Haslam and Levy’s sample demographically, they did seem to be representative of psychology undergraduates at Auburn University. In 2005, approximately 75% of psychology undergraduates were female (Auburn University, 2006). In addition, the Auburn University Office of Institutional Research and Assessment (2006) reported that, for the 2006 fall semester in the College of Liberal Arts, 83.1% of students were Caucasian, 9.9% were African American, 1.4% were Asian, and 2.4% were Hispanic. These numbers are commensurate with the distribution of gender and race found in the current study. Although this sample lacks racial diversity, the demographics are fitting with the goal of using a sample representative of this particular southeastern university.

### Factor Analysis

Haslam and Levy (2006) concluded that essentialism is comprised of three factors. To compare the results of the current study with those Haslam and Levy (2006) reported, a principle components analysis was conducted using responses to the first seven items. This exploratory analysis supported a two-factor structure according to the Kaiser-Guttman rule, which states that only those factors with eigenvalues greater than one should be considered meaningful, and the scree test, which is a common method to determine the number of factors by using a graphical representation of eigenvalues. These two factors accounted for 54.72% of the variance. Results of the varimax-rotated factor solution are presented in Table 3. Instead of forming their own factor, as they did in Haslam and Levy's study, the two items measuring belief in historical invariance and universality (items 6 and 7) grouped together with items measuring belief in biological basis, immutability, and fixity (items 1, 2, and 3) while the items measuring belief in discreteness and defining features (items 4 and 5) comprised the second factor.

Table 3: Two factor solution loadings for original seven Haslam and Levy (2006) items

Items		Loadings	
		Factor 1	Factor 2
1. Homosexuality caused by biological factors	B1	<b>.80</b>	
3. Homosexuality set early in childhood	F1	<b>.79</b>	.23
2. Homosexual can become heterosexual	I1r	<b>.71</b>	
7. Homosexuality only exists in certain cultures	U1r	<b>.56</b>	-.32
6. Homosexuality existed throughout history	H1	<b>.55</b>	
4. Homosexuality has clear boundaries	Ds1		<b>.79</b>
5. Homosexuals have defining characteristics	Df1		<b>.78</b>

Note: Significant loadings are denoted in bold; loadings < .20 not reported. For the items: B = biological basis, I = immutability, F = fixity, Ds = discreteness, Df = defining features, H = historical invariance, U = universality; 1 = male item, 2 = female item, 3 = gender neutral; r = reverse scored

Since Haslam and Levy (2006) reported a three-factor solution to their data, a second principle components analysis was conducted in which a three-factor solution was specified as the desired outcome. The results of the varimax-rotated factor solution are presented in Table 4. The three factors accounted for 68.67% of the total variance. Consistent with Haslam and Levy’s reported solution, the first factor was comprised of items measuring beliefs in the biological basis, immutability, and fixity of homosexuality (items 1, 2, and 3), the second factor consisted of the items measuring beliefs in the historical invariance and universality of homosexuality (items 6 and 7), and the third factor contained the items assessing beliefs in homosexuality’s discreteness and defining features (items 4 and 5).

Table 4: Three factor solution loadings for original seven Haslam and Levy (2006) items

Items		Loadings		
		Factor 1	Factor 2	Factor 3
1. Homosexuality caused by biological factors	B1	<b>.83</b>		
2. Homosexual can become heterosexual	I1r	<b>.79</b>		
3. Homosexuality set early in childhood	F1	<b>.77</b>	.24	
6. Homosexuality existed throughout history	H1		<b>.85</b>	
7. Homosexuality only exists in certain cultures	U1r		<b>.77</b>	
4. Homosexuality has clear boundaries	Ds1			<b>.84</b>
5. Homosexuals have defining characteristics	Df1			<b>.78</b>

Note: Significant loadings are denoted in bold; loadings < .20 not reported. For the items: B = biological basis, I = immutability, F = fixity, Ds = discreteness, Df = defining features, H = historical invariance, U = universality; 1 = male item, 2 = female item, 3 = gender neutral; r = reverse scored

In addition to comparing the factor structure obtained from the original seven items in the current study to that obtained by Haslam and Levy (2006), comparisons were also made between the mean responses for each of these seven items to detect any differences between the two samples on individual items. Results of independent-samples

*t*-tests are presented in Table 5. These results suggest that while the students in the current sample and the students in Haslam and Levy’s sample may be similar in the degree to which they hold certain essentialist beliefs about homosexuality (i.e., belief in biological basis, immutability, and fixity), the two samples differ significantly in the degree to which they ascribe to beliefs in the historical invariance, universality, discreteness and defining features of homosexuality.

Table 5: Comparisons of responses to original seven EBS items

Item		Haslam and Levy (2006)	Current Study	
1: Biological	Mean	3.32	3.09	<i>t</i> (566) = 1.94, <i>ns</i>
	SD	1.29	1.52	
	N	309	259	
2: Immutability	Mean	3.44	3.41	<i>t</i> (566) = .25, <i>ns</i>
	SD	1.22	1.64	
	N	309	259	
3: Fixity	Mean	3.46	3.35	<i>t</i> (566) = 1.00, <i>ns</i>
	SD	1.20	1.43	
	N	309	259	
4: Discreteness	Mean	4.76	3.59	<i>t</i> (566) = 10.22, <i>p</i> < .01
	SD	1.15	1.58	
	N	309	259	
5: Defining Features	Mean	4.94	3.11	<i>t</i> (566) = 17.25, <i>p</i> < .01
	SD	1.10	1.42	
	N	309	259	
6: Historical Invariance	Mean	3.39	4.85	<i>t</i> (566) = -12.68, <i>p</i> < .01
	SD	1.32	1.42	
	N	309	259	
7: Universality	Mean	3.83	4.82	<i>t</i> (566) = -9.73, <i>p</i> < .01
	SD	1.15	1.27	
	N	309	259	

*Goal #2: Extension*

Since seven items are not adequate to evaluate a multidimensional construct using factor analysis, and the structure of essentialist beliefs are under investigation in this

study, the extended version of the EBS was subjected to exploratory factor analysis. A principle components analysis of the 25 items on the EBS<sub>3</sub> resulted in a three-factor solution according to the Kaiser-Guttman rule and the scree test. These three factors accounted for 49.52% of the total variance in responses. The loadings for each item after varimax rotation of the factors are presented in Table 6.

Table 6: Factor loadings for the rotated three factor solution

Items		Loadings		
		Factor 1	Factor 2	Factor 3
2. Homosexual can become heterosexual	I1r*	<b>.81</b>		
19. Therapy cannot change homosexuality	I2	<b>.74</b>		
8. Some children born to be homosexual	B3	<b>.73</b>	.26	
12. Homosexuality not caused by biology	B1r	<b>.73</b>	.27	-.21
9. Therapy can change homosexuality	I2r	<b>.73</b>	.22	
1. Homosexuality caused by biology	B1*	<b>.71</b>	.26	-.24
3. Homosexuality set early in childhood	F1*	<b>.65</b>	.30	
13. People choose sexual orientation	I3r	<b>.52</b>		
16. Homosexuality exists in all cultures	U1		<b>.86</b>	
7. Homosexuality exists in certain cultures	U1r*		<b>.79</b>	
24. There are places without homosexuality	U3r		<b>.73</b>	
21. Homosexuality present in every society	U2		<b>.71</b>	
6. Homosexuality existed throughout history	H1*		<b>.67</b>	
15. Homosexuality existed before current time	H3	.31	<b>.65</b>	
18. Everyone heterosexual in ancient times	H2r	.23	<b>.63</b>	-.22
4. Homosexuality has clear boundaries	Ds1*			<b>.71</b>
25. Difference between hetero- and homosexual	Df1			<b>.71</b>
5. Homosexuals have defining characteristics	Df1*			<b>.66</b>
20. No difference among hetero- and homosexual	Df1r	-.20		<b>.61</b>
14. Cannot be attracted to men and women	Ds1			<b>.56</b>
22. No difference in relationships	Df2r			<b>.55</b>
11. Sexuality can be in the middle	Ds2r			<b>.43</b>
10. Relationships distinctly different	Df1	<b>-.47</b>	-.24	<b>.54</b>
17. Environment causes homosexuality	B2r	.20		
23. Homosexuality appears later in life	F2r	.23	.33	-.24

Note: Significant loadings are denoted in bold; loadings < .20 not reported. For the items: B = biological basis, I = immutability, F = fixity, Ds = discreteness, Df = defining features, H = historical invariance, U = universality; 1 = male item, 2 = female item, 3 = gender neutral; r = reverse scored; \* = original item in Haslam & Levy (2006)

Eight of the 25 items loaded strongly on the first factor, which accounted for 18.05% of the variance. Items on this first factor assessed beliefs that homosexuality has a biological basis (items 1, 8, and 12), cannot be changed (items 2, 9, 13, and 19), and is fixed in childhood (item 3). The second factor, which accounted for 16.55% of the variance, comprised seven items associated with the ideas that homosexuality is a universal phenomenon that occurs across cultures (items 7, 16, 21, and 24) and that it has existed throughout history (items 6, 15, and 18). The six items that loaded on the third factor, explaining 12.58% of the variance, focused on the belief that homosexuals are a discrete group (items 4, 11, and 14) with defining features that distinguish them from heterosexuals (items 5, 20, 22, and 25). Since these three factors are consistent with those found by Haslam and Levy (2006) in content and meaning, we will apply the labels used in their study (i.e., Immutability, Universality, and Discreteness). Two items failed to load strongly on any one of the three factors. These items were intended to represent the essentialist elements of biological basis (item 17) and fixity (item 23) in reference to lesbians specifically. In addition, one item meant to detect a belief in defining features for homosexual males (item 10) loaded strongly on both the immutability and discreteness factors.

Since Haslam et al.'s (2000) previous work with a similar scale found only two factors, and since analysis of responses to the original seven items in this study yielded a two-factor solution, a two-factor solution was also explored. Factor loadings after varimax rotation are presented in Table 7.

Table 7: Factor loadings for rotated two factor solution

Items		Loadings	
		Factor 1	Factor 2
2. Homosexual can become heterosexual	I1r*	<b>.77</b>	
8. Some children born to be homosexual	B3	<b>.74</b>	.23
9. Therapy can change homosexuality	I2r	<b>.74</b>	
12. Homosexuality not caused by biology	B1r	<b>.74</b>	.28
19. Therapy cannot change homosexuality	I2	<b>.73</b>	
3. Homosexuality set early in childhood	F1*	<b>.72</b>	
1. Homosexuality caused by biology	B1*	<b>.71</b>	.30
13. People choose sexual orientation	I3r	<b>.45</b>	
25. Difference between hetero- and homosexual	Df1		<b>-.65</b>
4. Homosexuality has clear boundaries	Ds1*		<b>-.61</b>
22. No difference in relationships	Df2r	-.35	<b>-.60</b>
5. Homosexuals have defining characteristics	Df1*		<b>-.59</b>
14. Cannot be attracted to men and women	Ds1		<b>-.54</b>
7. Homosexuality exists in certain cultures	U1r*	.38	<b>.52</b>
20. No difference among hetero- and homosexual	Df1r		<b>-.51</b>
21. Homosexuality present in every society	U2	.30	<b>.51</b>
24. There are places without homosexuality	U3r	.37	<b>.51</b>
11. Sexuality can be in the middle	Ds2r		<b>-.43</b>
10. Relationships distinctly different	Df1	<b>-.43</b>	<b>-.56</b>
16. Homosexuality exists in all cultures	U1	<b>.44</b>	<b>.51</b>
15. Homosexuality existed before current time	H3	<b>.50</b>	<b>.40</b>
18. Everyone heterosexual in ancient times	H2r	<b>.40</b>	<b>.51</b>
6. Homosexuality existed throughout history	H1*	.37	.39
23. Homosexuality appears later in life	F2r	.29	.37
17. Environment causes homosexuality	B2r	.10	-.01

Note: Significant loadings are denoted in bold; loadings < .20 not reported. For the items: B = biological basis, I = immutability, F = fixity, Ds = discreteness, Df = defining features, H = historical invariance, U = universality; 1 = male item, 2 = female item, 3 = gender neutral; r = reverse scored; \* = original item in Haslam & Levy (2006)

In the two-factor solution, the first factor was comprised of the same items that loaded strongly on the immutability factor in the three-factor solution (items 1, 2, 3, 8, 9, 12, 13, and 19). Seven of the eight items that made up the discreteness factor (items 4, 5, 11, 14, 20, 22, and 25) and three of the seven factors that formed the universality factor

(items 7, 21, and 24; all measuring universality rather than historical invariance) loaded strongly on the second factor. Two of the three items intended to measure historical invariance loaded on both factors (items 15 and 18), and the third of these items did not load on either factor (item 6). One item measuring universality loaded on both factors (item 16). The same defining features item that loaded on two factors in the three-factor solution (item 10) also loaded on both factors in this solution. On the second factor, items measuring a belief in universality had positive loadings while the discreteness items had negative loadings. The two factors did not demonstrate a clear simple solution. In addition, the alpha coefficient for this combined factor was .54, which is a decrease from those alphas obtained when the items were separated into two factors ( $\alpha = .87$  and  $.72$  for Factors 2 and 3, respectively). If the items comprising the second factor had represented a unified construct, the increase in number of item should have increased the coefficient alpha.

Additional analyses of the EBS<sub>3</sub> were conducted to determine whether participants responded to items referring to males differently than they responded to items referring to females. A multivariate analysis of variance with all items of the EBS<sub>3</sub> entered as dependent measures, and participant gender as a between-subjects factor, resulted in a Wilks'  $\lambda (25, 235) = .82, p < .01$ , indicating that there are differences in responses and/or between participant genders. Table 8 contains the descriptive statistics and results of custom hypotheses comparing means for the ATL and ATG within each gender as well as the means for the total sample. A custom hypothesis test showed that, overall, participants did not respond differently to items addressing essentialist beliefs about gay men than they did to items addressing essentialist beliefs about lesbians.

However, an additional custom hypothesis test for an interaction effect between participant gender and the gender to which the essentialist belief item referred was significant ( $F(1, 254) = 4.70, p < .05$ ), suggesting there may be differences in the ways in which males and females conceptualize this construct. For male participants, there was not a significant difference between responses to items referring to males and items referring to females. Female participants' showed a significant difference between responses to these items. T-tests indicate that male and female participants responded differently to items referring to females ( $t(254) = -3.92, p < .001$ ), but this difference was not significant for items referring to males ( $t(254) = -1.56, ns$ ).

Table 8: Responses to male-specific and female-specific items by gender

Participants		Male Items	Female Items	
Females	Mean	3.80	3.99	$F(1, 199) = 18.57, p < .001$ $\eta^2 = .09$
	SD	.53	.56	
	N	200	200	
Males	Mean	3.68	3.67	$F(1, 55) = .02, ns$ $\eta^2 = .00$
	SD	.58	.49	
	N	56	56	
Total	Mean	3.78	3.92	$F(1, 254) = 3.73, ns$ $\eta^2 = .01$
	SD	.54	.56	
	N	256	256	

### *Goal # 3: Essentialist Beliefs and Antigay Attitudes*

Given the clear simple structure of the three-factor solution, these factors were used to investigate the relationship between essentialist beliefs and attitudes toward homosexuals by determining the correlations between each factor and the ATLG scale. Factor totals were determined by calculating unweighted averages for each individual's responses on the items that comprise the factors (eight for Factor 1, and seven for Factors

2 and 3). The one item that loaded on more than one factor was not included in either factor. Attitudes were related to all three factors. The immutability factor (Factor 1) was negatively correlated with prejudice toward gay men and lesbians ( $r = -.71, p < .001$ ). Likewise, the universality factor (Factor 2) demonstrated a negative correlation with antigay attitudes ( $r = -.48, p < .001$ ). The discreteness factor (Factor 3) showed a relationship with prejudice toward homosexuals that was unique compared to the other factors in that this factor and antigay attitudes were positively correlated ( $r = .58, p < .001$ ). These results suggest that beliefs in the immutability and universality of homosexuality are associated with fewer negative attitudes toward this group, and the belief that membership in this group is discrete (i.e., there are definite boundaries between homosexual and heterosexual) is associated with more negative attitudes. These correlations, as well as intercorrelations among the three factors, the component parts of the ATLG (ATL and ATG), and the religious fundamentalism scale are depicted in Table 9.

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Table 9: Correlations among scales

	1	2	3	4	5	6	7
1. ATL	1.00						
2. ATG	.92	1.00					
3. ATLG	.98	.98	1.00				
4. Factor 1 (Immutability)	-.67	-.71	-.71	1.00			
5. Factor 2 (Universality)	-.46	-.48	-.48	.50	1.00		
6. Factor 3 (Discreteness)	.59	.55	.58	-.31	-.35	1.00	
7. RFS	.69	.63	.67	-.53	-.35	.39	1.00

Note: ATL = attitudes toward lesbians; ATG = attitudes toward gay men; ATLG = attitudes toward lesbians and gay men; RFS = religious fundamentalism scale. For all correlation values  $p < .01$

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Further exploration of the data indicated reports of antigay attitudes were not consistent across items measuring attitudes toward lesbians and attitudes toward gay men. A multivariate analysis with all items of the ATLG entered as dependent measures, and participant gender as a between-subjects factor, resulted in a Wilks'  $\lambda (20, 235) = .78, p < .001$ , indicating that there are significant differences among responses and/or between genders. Table 10 contains the descriptive statistics and results of custom hypotheses comparing means for the ATL and ATG within each gender as well as the means for the total sample. In addition, there was an interaction between participant gender and items assessing attitudes toward lesbians versus gay men ( $F(1, 254)=34.53, p < .001$ ). The difference between female participants' attitudes toward gay men and lesbians, though statistically significant, is less than the difference between male participants' attitudes toward gay men and lesbians. Of note is that both males and females endorsed more antigay attitudes toward gay men than toward lesbians; however, the small effect size for female participants should be taken into account when interpreting these results.

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Table 10: Responses to ATL and ATG by gender

Participants		ATL	ATG	
Females	Mean	4.22	4.59	$F(1, 199) = 38.45, p < .01$ $\eta^2 = .16$
	SD	2.09	2.35	
	N	200	200	
Males	Mean	4.66	5.84	$F(1, 55) = 57.96, p < .01$ $\eta^2 = .51$
	SD	2.15	2.43	
	N	56	56	
Total	Mean	4.31	4.81	$F(1, 254) = 124.78, p < .001$ $\eta^2 = .33$
	SD	2.10	2.41	
	N	256	256	

---

For the overall ATLG scale, the mean scores of male participants ( $M = 5.25$ ,  $SD = 2.22$ ) were significantly higher than scores of female participants ( $M = 4.41$ ,  $SD = 2.18$ ) on this measure ( $t(254) = 2.54$ ,  $p = .01$ ).

*Goal # 4: Religious Fundamentalism*

Considering the substantial correlation found between essentialist beliefs and religious fundamentalism ( $r = .67$ ,  $p < .001$ ), it seems of importance to establish the degree to which essentialist beliefs predict antigay attitudes beyond that accounted for by religious fundamentalism. In order to do so, a hierarchical regression model was calculated with religious fundamentalism entered into the model first and the three factors of essentialist beliefs entered second. Results are reported in Table 11.

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Table 11: Hierarchical Regression Predicting Attitudes

	$R^2$	$\beta$	$t$	$p$
Model 1	.45			
RFS		.67	14.44	<.001
Model 2	.71			
RFS		.31	7.39	<.001
Factor 1 (Immutability)		-.42	-9.62	<.001
Factor 2 (Universality)		-.05	-1.33	.186
Factor 3 (Discreteness)		.31	8.22	<.001

---

In the first model, religious fundamentalism was a significant predictor of antigay attitudes;  $F(1,257) = 208.45$ ,  $p < .001$ . In the second model, essentialist beliefs added predictive value to this regression;  $F(4,254) = 154.05$ ,  $p < .001$ . Within the overall model, religious fundamentalism, factor 1 (Immutability) and factor 3 (Discreteness) were significant predictors of antigay attitudes. Factor 2 (Universality) was not a significant predictor.

A stepwise regression analysis confirmed that Factors 1 and 3 accounted for significant amounts of the variance in antigay attitudes. Stepwise regression, unlike hierarchical regression, does not use *a priori* assumptions about which variable will contribute the most variance and instead empirically determines the variable that predicts the largest amount of variance in the dependent measure. The results of this analysis are reported in Table 12.

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Table 12: Stepwise Regression Predicting Attitudes

	$R^2$	$\beta$	$t$	$p$
Model 1	.50			
Factor 1 (Immutability)		-.71	-15.92	< .001
Model 2	.64			
Factor 1 (Immutability)		-.58	-14.72	<.001
Factor 3 (Discreteness)		.40	10.19	<.001
Model 3	.71			
Factor 1 (Immutability)		-.44	-10.89	<.001
Factor 3 (Discreteness)		.32	8.69	<.001
RFS		.31	7.46	<.001

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In this case, the regression model indicated that Factor 1 accounted for the most variance in antigay attitudes, and Factor 3 contributed an additional 15%. After taking into account these two factors, religious fundamentalism accounted for an additional 6% of the variance.

## Discussion

### *Replication*

Demographically, the sample for the current study differed significantly from the sample Haslam and Levy used. This sample was approximately 4/5 female, whereas their sample was comprised of an almost equal number of males and females. Further, the

sample used here was not nearly as ethnically diverse as Haslam and Levy's, whose study utilized twice as many non-Caucasian participants as Caucasian participants. The difference in ages of the participants in the two samples, while statistically significant, may not be as meaningful as the differences in gender and race. Comparisons between Haslam and Levy's results and the results of the current study should be interpreted with these demographic differences in mind.

Contrary to the results Haslam and Levy (2006) reported, when the current study's responses to the original seven items from the EBS<sub>2</sub> were analyzed, a three-factor structure was not obtained. Exploratory analyses resulted in only two factors. In this case, historical invariance and universality items loaded with the biological basis, immutability, and fixity items. Discreteness and defining features made up the second factor. Theoretically, these results make sense – if one believes that a phenomenon is biologically based and unchanging, then a belief that the phenomenon has existed throughout history and across cultures seems fitting. Haslam et al. (2000, 2002) found results similar to these in that the one item they used to assess a belief in historical invariance loaded on a factor with beliefs in the biological basis and immutability of social categories. When analyses were conducted specifying three as the desired number of factors, results were consistent with Haslam and Levy's. The universality and historical invariance items did form their own factor separate from the immutability and discreteness factors, suggesting that there is something to the idea that essentialism is comprised of these three subconcepts. The nature and meanings of the dimensions of this multidimensional construct are difficult to discern with this limited number of items. The addition of items to this scale was intended to improve the clarity of these concepts.

### *Extension*

By extending the EBS to include multiple items assessing each element of essentialist beliefs, the current study aimed to better understand the structure of these beliefs. In other words, the goal was to try and figure out how these elements group together. Although the elements are all considered parts of essentialism, they carry with them different meanings, and a belief in one element does not ensure belief in the others. The factor structure obtained from the extended version of this scale supported a three-factor solution similar to the structure Haslam and Levy (2006) obtained. The results showed a clear simple structure with only two items failing to load on any of the factors and only one item loading on more than one factor.

Haslam and Levy's assertion that beliefs in the universality of homosexuality should be considered separately from beliefs in immutability and discreteness seems to hold true for this sample. This clarification is of importance, as previous studies have shown inconsistent results, and the historical and cross-cultural incidence of homosexuality has been widely debated. Furthermore, studies focusing on essentialist beliefs and social categories in general (e.g., Haslam, 2000) did not find this third factor. It may be that universality and historical invariance are more salient constructs when conceptualizing homosexuality than when conceptualizing other social groups. For other social categories, such as gender or race, people may be more likely to believe in the presence of these categories across time and cultures as part of a belief that these categories are biologically based; therefore responses to items assessing these beliefs would be consistent. In contrast, belief in the universality of homosexuality may not necessarily be the same as the belief that it is a biological phenomenon.

Previous work (Hegarty, 2002; Hegarty & Pratto, 2001) suggests two factors comprise essentialist beliefs about homosexuality – immutability and fundamentality, the content meanings of which seem similar to that of the current study’s immutability and discreteness factors. Hegarty and Pratto’s (2001) measure of essentialist beliefs included one item related to the presence of homosexuality cross-culturally, and this item was reported as loading on the fundamentality factor; however, the factor loading was negative while the items assessing belief in discreteness had positive loadings. When data from the current study were analyzed using a two-factor solution, a similar pattern appeared; however, there was not a clear simple solution as many items loaded on both factors. Items assessing the belief in the immutability and biological basis of homosexuality formed the first factor, and items assessing the belief in the presence of defining features, discreteness and universality loaded on a second factor. However, the directions of the loadings were different for defining features and discreteness than for universality. These results may indicate that the elements comprising this factor are at opposite ends of a continuous construct. This is the case for constructs such as introversion/extraversion – items measuring the two extremes of this construct would load on the same factor but in different directions. However, theoretically, this conclusion does not make much sense for the concepts of discreteness and universality. Another possible explanation for these results may be that these beliefs do not actually go together as being part of the same construct, but that they fit more with each other than they do with beliefs in immutability and when forced into a two factor structure, these items end up in a group together.

The differences between items measuring beliefs and attitudes about gay men and those items measuring beliefs and attitudes about lesbians may be of importance in understanding how people, especially females, conceptualize homosexuality. Male participants seemed to respond consistently regardless of the gender to which the item referred. Female participants, however, “essentialized” (i.e., gave higher ratings for) items on the EBS<sub>3</sub> that directly referred to lesbians more than items that specifically mentioned gay males. In addition, female participants endorsed more essentialist beliefs about female homosexuals than male participants did. This difference could be of interest to those developing future studies that investigate this issue, as it may be appropriate to implement the use of separate scales or subscales to gain an accurate impression of the obtained results. At the very least, it would be important for future researchers to further investigate the gender differences found in this study as they may represent real differences in the ways in which males and females think about homosexuality.

#### *Essentialist Beliefs and Prejudice*

The relationship between essentialism and prejudice has been documented extensively (e.g., Allport, 1954; Bastian & Haslam, 2006; Levy et al., 1998; Rothbart & Taylor, 1992; Yzerbyt & Rocher, 2002). However, the nature of the relationship is not clear-cut, i.e., holding essentialist beliefs about a category does not necessarily indicate a predisposition toward prejudice, and the associations among elements of essentialism and prejudice differ depending on the category. In the case of homosexuality, it has actually been shown that certain elements of essentialist beliefs may actually protect against prejudicial attitudes rather than promote them (Haslam et al., 2002). Specifically, belief in the inalterability and biological basis of homosexuality were associated with lower

levels of antigay attitudes. Replicating previous findings, the immutability factor was associated with the endorsement of lower degrees of antigay attitudes, as was the universality factor. The correlations between these factors and antigay beliefs were stronger than Haslam and Levy's reported results ( $r$ s between  $-.27$  and  $-.32$ ), which may be related to a difference in participant attitudes.

Also consistent with Haslam and Levy's findings, the discreteness factor was positively correlated with antigay attitudes. This relationship between essentialist beliefs and antigay attitudes suggests that when individuals believe homosexuality to be a biological phenomenon that is fixed early in life and unchangeable, and has existed throughout history and in different cultures, those individuals are less likely to report prejudice toward homosexuals. However, when individuals view homosexuality as having discrete boundaries and believe that there are defining characteristics that distinguish homosexuals from heterosexuals, those individuals are more likely to endorse antigay attitudes.

Put into different terms, people who conceptualize homosexuality as a choice (i.e., not biological, able to change, and decided later in life), and believe that those people who choose to be homosexual are decidedly different from heterosexuals, tend to have prejudicial attitudes toward homosexuals as a social group. The relationship between belief in a biological basis and antigay attitudes is interesting considering other studies have found that beliefs that category members in other social categories, especially gender and racial groups, have biological underpinnings dictating their category membership are associated with more prejudicial attitudes (e.g., Keller, 2005).

Since the universality factor is unique to Haslam and Levy's (2006) study and the current study, belief in the universality of a given social category has not been investigated as it relates to attitudes toward social groups. However, it seems that the relationship between attitudes and this particular dimension could go in a variety of ways for a given group. Individuals may see the category as historically invariant and universal, yet also as a category that has historically been stigmatized and therefore continue the historical trend by ascribing to prejudicial attitudes (as could be the case with Jews or African Americans). In contrast, the existence of a group may be viewed as a phenomenon that can be understood as part of human existence and therefore acceptable, as may be the case when homosexuality is perceived as universal. Another possibility is that the universality dimension does not significantly impact attitudes toward the group but it is the other essential elements that matter. In this study, the universality factor did not contribute unique variance in attitudes beyond that accounted for by the immutability and discreteness factors and religious fundamentalism.

Also, the degree to which both male and female participants endorsed antigay attitudes toward gay males was significantly greater than the degree to which they reported antigay attitudes toward lesbians; however, males reported greater antigay attitudes than females overall. It seems that participants have more difficulty accepting male homosexuality than they do accepting female homosexuality, and this difference is likely associated with essentialist beliefs about these groups. Males may be particularly prone to prejudice against gay males and be more likely to endorse beliefs in the discreteness of male homosexuality as a way to distance themselves from this group.

### *Essentialist Beliefs and Religious Fundamentalism*

Unlike most other social groups, homosexuals are often stigmatized for not only being a minority group but also because most religions prohibit the behavior that defines the group. Religious fundamentalism has been shown to be associated with antigay attitudes across a variety of studies (e.g., Johnson et al., 1997; Olson et al., 2006; Schulte & Battle, 2004; Schwartz & Lindley, 2005); therefore, it was assumed that, in this study, attitudes would be affected by the individual's level of religious fundamentalism. By investigating the extent to which essentialist beliefs predict attitudes about homosexuality beyond that predicted by religious fundamentalism, the current study aimed to better understand the relationships among these variables.

The original plan was to conduct analyses under the *a priori* assumption that religious fundamentalism would account for the most variance in responses to the ATLG. While it did prove to be a significant predictor, the immutability and discreteness factors also contributed to predicting substantial amounts of variance. Further analyses revealed that, of the four variables (the three factors and religious fundamentalism), belief in the immutability of homosexuality actually accounted for the largest amount of variance in attitudes. These findings are important for future research on prejudice against homosexuals and suggest that the degree to which an individual holds essentialist beliefs about this particular social category should be assessed along with other personality variables including, but not limited to, religious fundamentalism.

### *Limitations*

This study, as with any other, is not without its limitations. The sample used was a sample of convenience, and represents the views of the participants, which may not be an

accurate representation of the views of non-students. In addition, 44 of the original participants were dropped, 30 of which were dropped due to missing data. These missing data were likely due to computer error in transferring results into the online database.

Further, essentialism is complex, and it is difficult to know if the measure of this concept is actually assessing the construct under investigation. Although the items did group together well in a solution similar to that obtained by Haslam and Levy (2006), they were developed by the authors to be similar in meaning to those Haslam and Levy used. Therefore, it can be said that the beliefs measured by the EBS<sub>3</sub> are likely the same as those measured by the EBS<sub>2</sub>, it is difficult to know if the items are truly assessing “essentialism,” or if there are additional subconcepts to this already complicated higher order concept. In addition, factor analysis has been criticized for involving too much subjectivity in the process, and the decision-making process may encourage the use of *a priori* assumptions or biases in drawing conclusions from the data.

Another possible limitation of this study is that the measure used to assess antigay attitudes, the ATLG, was developed 20 years ago. Some of the issues concerning homosexuality, such as whether or not homosexuals should be allowed to teach school, may not be as pertinent today as they were in the late 1980s. This particular measure was chosen because it was the measure used in Haslam and Levy’s study. In an effort to replicate their findings as accurately as possible, newer measures of antigay attitudes were rejected in favor of this well-established one.

### *Conclusion*

Despite its limitations, the findings reported in this study provide some insight into how people understand the concept of homosexuality and the impact of a particular

way of thinking about this group on how people feel about its members. With same-sex marriage being a hot-topic on the current political agenda, attitudes toward homosexuals have begun to be recognized as an important issue much in the way racial prejudice gained recognition in the 1950s and 1960s. If the question of social construction versus biological basis is ever answered, the result will likely change the degree to which people accept the idea of homosexuality. Unlike most other categories, a belief in some amount of underlying essence that defines homosexuals seems to protect these individuals from prejudice. However, to essentialize a category that may very well be less of an actual category than one end of a continuum may have consequences that cannot as of yet be predicted. If people use essentialism to separate the world around them into neat little boxes, what becomes of those individuals who fall outside of the box?

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## Demographics

1. Age: \_\_\_\_\_
2. Gender:  Male  Female
3. Which area best describes where you grew up?
  - Rural (Country)
  - Suburban/Small Town (Outside a large city or in a small town)
  - Urban (City)
4. Which of the following best describes your primary race/ethnicity? (Please check only one choice.)
  - Asian-American
  - Black/African American
  - Native American
  - Hispanic
  - White/Caucasian
  - Multiracial (specify: \_\_\_\_\_)
  - Other (specify: \_\_\_\_\_)
5. Which category does your major fall into?
  - Arts (Art, Dance, Design, Language, Music, Theatre)
  - Business (Accounting, Computer Science, Economics, Finance, Marketing)
  - Health Professions (Athletic Training, Physical Therapy, Physician's Assistant, Premed)
  - Humanities (Education, English, History, Philosophy, Journalism, Religion)
  - Math/Engineering
  - Natural Science (Biology, Chemistry, Physics, Geography)
  - Social Science (Anthropology, Communication Disorders, Human/Child Development, Political Science, Psychology, Sociology, Social Work)
  - Undeclared
  - Other (specify: \_\_\_\_\_)
6. What is your average grade? (Please circle only one choice.)
  - A  C  F
  - B  D
7. What is your current year in school? (Please circle only one choice.)
  - First year (Freshman)  Junior  Graduate
  - Sophomore  Senior
8. What is your religious affiliation?
  - Agnostic
  - Episcopal
  - Mormon (LDS)
  - Atheist
  - Hindu
  - Pentecostal
  - Baptist
  - Jewish
  - Presbyterian
  - Buddhist
  - Lutheran
  - Protestant
  - Catholic
  - Methodist
  - Other
9. Please rate your level of religious identification. (please specify)
  - not at all religious
  - moderately religious
  - very religious
  - slightly religious
  - mostly religious

## Descriptions of Essentialist Belief Items

1. Male homosexuality is caused by biological factors such as genes and hormones. **[Biological basis; male]**
2. A homosexual man can become heterosexual. **[Immutability; male; reverse scored]**
3. Whether or not a man is homosexual or heterosexual is pretty much set early on in childhood. **[Fixity; male]**
4. Male homosexuality is a category with clear and sharp boundaries: men are either homosexual or they are not. **[Discreteness; male]**
5. Male homosexuals have a necessary or defining characteristic, without which they would not be homosexual. **[Defining features; male]**
6. Male homosexuality has probably existed throughout human history. **[Historical invariance; male]**
7. Male homosexuality probably only exists in certain cultures. **[Universality; male; reverse scored]**
8. Some children are born to become homosexual, while others are born to be heterosexual. **[Biological basis; gender neutral]**
9. Certain types of therapy can be used to change lesbians into heterosexual women. **[Immutability; female; reverse scored]**
10. Homosexual relationships are distinctly different from heterosexual relationships. **[Defining features; male]**
11. A woman's sexuality can be somewhere between homosexual and heterosexual. **[Discreteness; female; reverse scored]**
12. Male homosexuality is not caused by biological factors such as genes and hormones. **[Biological basis; male; reverse scored]**

13. The phrase “sexual preference” is politically correct since people can choose their sexual orientations. **[Immutability; gender neutral; reverse scored]**
14. If a man wants to have sexual relationships with other men, then he must not want to have sexual relationships with women. **[Discreteness; male]**
15. Homosexuality probably existed before the development of civilization as we know it. **[Historical invariance; neutral]**
16. Male homosexuality probably exists in all cultures. **[Universality; male]**
17. Sometimes a child’s environment causes her to become homosexual. **[Biological basis; female; reverse scored]**
18. In ancient times, women were probably all heterosexual. **[Historical invariance; female; reverse scored]**
19. Therapy cannot change a lesbian into a heterosexual woman. **[Immutability; female]**
20. It is difficult to tell when a man is homosexual because there are no distinct differences between heterosexual and homosexual men. **[Defining features; male; reverse scored]**
21. Although different societies have different views on sexuality, lesbianism is probably present in every society. **[Universality; female]**
22. Lesbian relationships are no different from heterosexual relationships. **[Defining features; female; reverse scored]**
23. Little girls cannot be homosexual because homosexuality appears later in life. **[Fixity; female; reverse scored]**
24. There are some places in the world in which homosexuality does not exist. **[Universality; neutral; reverse scored]**
25. It is not difficult to tell when a man is homosexual because there is a distinct difference between heterosexual and homosexual men. **[Defining features; male]**