

NEED FOR COGNITION, AMBIGUITY TOLERANCE AND LIKELIHOOD OF  
PREJUDICE

by

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## **ABSTRACT**

The purpose of this study is to investigate whether there is a relationship between Need for Cognition, Ambiguity Tolerance and prejudice. Research has supported the idea that people categorize groups based on essentialized characteristics such as sex and race and that this tendency is likely mediated (e.g., strengthened or weakened) by certain cognitive processing tendencies. This is important because categorization can sometimes lead to prejudiced behaviors. The proposed research will investigate the links between Need for Cognition, Ambiguity Tolerance and prejudice. A total of 297 students answered three surveys: The Multiple Stimulus Types Ambiguity Test-I, the Need for Cognition scale and the Quick Discrimination Index. The Quick Discrimination Index consists of three subscales, two specific to race. Results suggest that those scoring higher on the Need for Cognition Scale scored lower on the Quick Discrimination Index which measures affective and cognitive racial beliefs as well as sexist convictions. In conclusion, finding a way to boost the desire to learn may be a way to lessen prejudice and with further study, the Need for Cognition scale may be a useful tool for evaluating individuals applying for jobs in certain occupations such as counseling and police work.

# I. LITERATURE REVIEW

## Social Identity Theory

Social identity theory was constructed in the seventies by John Turner and Henri Tajfel (Tajfel & Turner, 1979). It posits that people understand their social world by categorizing groups of people, which creates ingroups and outgroups as a natural consequence. (Tajfel & Turner, 1979). Ingroups are those that we feel a part of, and the outgroup consists of all others. We, as human beings, seem to naturally categorize, name and separate people based on group membership which can foster negative attitudes and behaviors towards other groups such as bias and stereotyping because we see people as salient members of these groups. When people categorize themselves in a process of self-categorization, they increase the differences between their ingroup and the outgroup which can only happen if there is an opposite, contrasting social category (Stets and Burke, 2000). For example, if an individual were to categorize his or herself as a fan of a particular sports team, he or she may dislike an opposing sports team.

Social identity theory further explains group relations through an intergroup schema with several features (Brewer, 1996). First, there is the accentuation principle which assumes when people assimilate into a group, they view other members of their ingroup as similar to themselves and members of the outgroup as dissimilar (Brewer, 1996). Next, there is the ingroup favoritism principle, which states that positive features and benefits are provided to ingroup members but not to outgroup members (Brewer, 1996). Finally, there is the social competition principle, which explains that each group views the other as less positive and their activities as more negative than the ingroup (Brewer, 1996).

When an individual becomes a member of an ingroup, they integrate with the group's norms, behaviors and attitudes (Stets & Burke, 2000). It also entails, "being like others in the group, and seeing things from the group's perspective" (Stets & Burke, 2000 p, 226). Once someone has been accepted into the ingroup, they immediately see the ingroup as more positive and identify with the ingroup, thereby strengthening the group (Stets & Burke, 2000). In addition to this, once a part of the group, one becomes very committed to it and it is a difficult decision to part from the group, even if the group's status is low (Stets & Burke, 2000). In fact, this process can be recognized in gangs. Once a part of a gang, individuals assimilate and see other gangs as threats and it can be very difficult to leave.

One powerful implication of this group identity is groupthink (Stets & Burke, 2000). This is of particular importance in any group with any sort of power and decision-making capabilities (Stets & Burke, 2000). The entire group thinks so similarly and agree on everything, that they don't realize when they are making a decision that only benefits them. Furthermore, those involved in groupthink may not see that an idea suggested by a group member is poorly thought out or harmful. Social identity also has levels of categorization (Stets & Burke, 2000). The identity of the self is the lowest form of identity (Stets & Burke, 2000). One can categorize themselves as a person, then as a student, then a student at Texas State University, a Texan, a Southerner and so forth and so on.

Some researchers have also argued that some identities overlap due to some common characteristic (Stets & Burke, 2000). For example, a female gender role may link to a role of submission or vice versa (Stets & Burke, 2000). Additionally, some individuals



may change their social identities in order to adjust to certain social situations (Stets & Burke, 2000). An illustration of this is the person who identifies as Muslim but who remains silent about his or her beliefs around a group who identifies as Christian. This could be for many reasons such as fear of ostracization. One word that comes up frequently in the research of social identity theory is salience. Salience is a “social identity that is functioning psychologically to increase the influence of one’s membership in that group on perception and behavior” (Stets & Burke, 2000 p, 229). In other words, it’s someone who represents the group well. There is a salience hierarchy, which dictates what role someone will use in circumstances where more than one role is an option (Stets & Burke, 2000). For example, if a doctor were at a friend’s party, and while speaking with some individuals finds out someone is a doctor in the same field and the other was in the same sorority in college as the doctor, she would need to choose which role she would like to most identify with.

An important topic in social identity theory is that of depersonalization. Depersonalization is the process of not seeing an individual as an individual, but as a group member. It is one of the mechanisms that fosters stereotyping because one would view a depersonalized outgroup member as embodying all the negative or positive characteristics of that group. Interestingly, this provides a key way to reduce intergroup bias. By having groups cooperate or interact with one another, some ideas can be disproved (Brewer, 1996). If group homogeneity can be dissolved, then it is possible to see the individuals as separate people than as a sole representative and embodiment of the group as a whole (Brewer, 1996). However, attempts to decrease depersonalization has some repercussions. Research suggests that people do not always want to be defined by the group

they belong to and so there appears to be a need to be seen as a separate individual. It seems then that there needs to be a balance.

### Optimal Distinctiveness

The balance between group identification and not being depersonalized mentioned above, played a key role in Marilyn B. Brewer's development of optimal distinctiveness theory in 1991. It is an extension and elaboration of social identity theory. Optimal distinctiveness theory attempts to explain intergroup and intragroup bias. It explains that people have a conflicting need that dictates the self and participation within a group (Brewer, 2007). In simpler terms, people like to belong, but they also enjoy being different and thus there is an optimal level of distinctiveness within groups (Brewer 2007).

As a group becomes more inclusive and accepting, humans are motivated to become more distinct and when a group becomes more exclusive, it triggers people to become more similar to the other group members (Brewer, 2007). A great example of optimal distinctiveness theory is within American hipster subculture. Hipsters are known for enjoying particularly obscure types of music. The key word is obscure because as soon as a band they rate highly becomes mainstream and popular, they are quick to denounce them and move on to another uncommon artist. They have a very defined and apparent optimal amount of distinctiveness that when threatened or challenged, causes them to respond by abandoning the band.

In order to explain further, some terms need to be further clarified. The superordinate group is the main, encompassing group. An example would be all Texas State University students. A subgroup is the smaller group within the superordinate group. In the example used above, that would be the Psychology department or Sociology department.

There are many different subgroups, which can range from the specific college at a university, to democrats or republicans or veterans and non-veterans.

There are a few issues that must be kept in mind about this theory. First, the level of optimal distinctiveness depends on different situations and these situations help determine the activation of uniqueness (Leonardelli, Picket, & Brewer, 2010). For example, if an oncologist attended a conference about cancer where there were other oncologists, then the need for differentiation would be activated due to the similarity he or she would feel to other members of the group at that moment (Leonardelli, Picket, and Brewer, 2010). If this same oncologist attended a staff meeting at the hospital where he or she was employed, then that need for inclusion and differentiation will have been satisfied (Leonardelli, Picket, and Brewer, 2010).

Secondly, the ideal position of differentiation and inclusivity is not permanent (Leonardelli, Picket, and Brewer, 2010). When someone initially becomes part of a social group, that individual will be most concerned with whether he or she fits in and will try hard to assimilate (Leonardelli, Picket, and Brewer, 2010). After a while, this group member becomes well established within the group and now is concerned if the group is exclusive enough and if the group's boundaries are sufficiently separated from other social groups (Leonardelli, Picket, and Brewer, 2010).

Thirdly, optimal distinctiveness very much depends on individual differences (Leonardelli, Picket, and Brewer, 2010). The threshold for when the need for distinctiveness is activated varies across cultures, situations and individuals (Leonardelli, Picket, and Brewer, 2010). Some people are more sensitive to changes that need to occur for activation than others. Another crucial point is that even though the need for assimilation and

differentiation are opposing forces, these two can work together so that people feel included and different (Leonardelli, Pickett, and Brewer, 2010).

In addition to explaining differentiation within groups, optimal distinctiveness theory attempts to explain intergroup bias. When subgroup uniqueness is threatened, the need for intergroup distinctiveness increases (Brewer, 2007). An example of a threat is combining two rival groups and causing them to lose their uniqueness (Crisp et al., 2006). When individuals belong to a group they deem as exclusive, “symbols and behaviors that differentiate the in-group from the local out-group become particularly important” (Brewer, 1991, p. 732.). This solidifies the group and diminishes the possibility of in-group benefits being broadened to those belonging to the out-group (Brewer, 1991). When the ingroup is threatened, there is an increased rift between “you” and “me” and the ingroup feels a greater need to differentiate themselves from the challenging group. They begin to distrust the outgroup and furthermore, it becomes very easy to fear them (Brewer, 1991).

Optimal distinctiveness is important for several reasons. Broadly, understanding how group membership affects perceptions of other groups will facilitate ways to reduce outgroup hate. If researchers do not understand how groups operate, then they cannot fully comprehend how bias appears between and within these groups. Another reason it is important is because we can attempt to predict group behavior. I believe that people naturally categorize people. Researching optimal distinctiveness theory helped solidify my belief that humans naturally categorize and label different groups. The implications of this theory are immense. There is research that shows how to reduce and increase bias,

how to prevent conflict and boost cooperation and in marketing, politics and drug use deterrence. Optimal distinctiveness theory predominantly addresses bias. Bias, in this case, is a predilection towards one's ingroup. As such, the concept of bias needs to be further explored.

### Bias

Intergroup bias is the “systematic tendency to evaluate one's own membership group (the ingroup) or its members more favorably than a nonmembership group (the outgroup) or its members” (Hewstone, Rubin, and Willis, 2002, p. 576). Bias can influence an individual's or group's behavior, cognition and attitudes and makes itself known in many different ways such as through prejudices, inequality, cruelty, maltreatment, injustice, wrongful persecution, and in very extreme cases, genocide (Hewstone, Rubin, & Willis, 2002).

There are different ways to measure intergroup bias and they fall into two categories – explicit and implicit measures (Hewstone, Rubin, & Willis, 2002). Explicit measures are those that someone can report such as a questionnaire or survey. Implicit measures are those that measure attitudes that are not immediately and necessarily cognitively available to an individual. An example of this type of measure is the Implicit Association Test. This test is completed on a computer and is very sensitive. It measures reaction times to different stimuli, which are usually negative or positive words and pictures. The length of time between responding to these stimuli is seen as indicators of levels of bias. There are other measures of implicit attitudes but this is one of the most common.

It has been suggested that group size, position, rank and hegemony affect levels of bias between groups and further, smaller groups show higher levels of bias than larger groups (Hewstone, Rubin, & Willis, 2002). The bias in larger groups is most apparent when group members feel that the difference in status is lessening and when it is clear that this is occurring. They also show altruism when the status gap is very wide (Hewstone, Rubin, & Willis, 2002). Lower status groups show more bias when the gap between their group and higher status groups seem impenetrable and permanent, and when status differences seem ambiguous (Hewstone, Rubin, & Willis, 2002).

Threats to a group's distinctiveness can increase the level of bias. When a group is threatened, members respond by working harder to differentiate themselves from the other subgroup. Researchers predicted that liberals and conservatives would view their ingroup leader, either John McCain or Barack Obama, as more attitudinally similar to themselves before the 2008 election and that after John McCain lost, conservatives would see him as more attitudinally distinct (Alabastro et al., 2012). This article referenced both social identity theory and optimal distinctiveness theory (Alabastro et al., 2012). For social identity theory, the researchers predicted that ingroup members should be seen as similar and outgroup members as different. The researchers cited optimal distinctiveness because they felt that before the election, liberals and conservatives would try and be very distinct from one another and that after the election, the defeated group would try and assimilate to the superordinate group, America, in order to attain a positive self-identity (Alabastro et al., 2012).

The experimenters collected the perceived attitude similarity scale measures before and after the 2008 presidential election from the participants. In addition to this, political ideology, attitudes on policy issues and perception of leader similarity were recorded. The results showed that conservatives perceived similarity to Barack Obama increased from pre to post election (Alabastro et al., 2012). Conservatives also decreased their perception of similarity to John McCain after the 2008 election while liberals did not change their perceived similarity due to their ingroup leader being declared the victor (Alabastro et al., 2012). This change in the perceived similarity conservatives felt towards Barack Obama occurred because if they continued to identify with John McCain, then they would experience a negative social identity (Alabastro et al., 2012). Barack Obama's triumph meant that he is now the American leader and if conservatives wish to assimilate, they would need to identify more with the elected president (Alabastro et al., 2012). This is one method by which bias can be reduced – forced assimilation due to circumstances beyond one's control. But research does show that more systematic and predictable methods for reducing bias can be developed. As such, the reduction of bias should be further clarified.

#### Reduction of Bias

Reduction of bias can be done at the individual level (Hewstone, Rubin, & Willis, 2002). One way is to provide stereotype-disconfirming information. This type of education is most effective when it is referring to a broad group of people rather than one individual who does not strongly represent the group (Dovidio, & Gaertner, 1999). Indirect approaches that intrinsically motivate people to change are most successful. For example, methods that involve showing inconsistencies of the way people feel about groups of

people and individual differences can cause people to feel guilty and tension and thus, motivate them to change their beliefs on their own (Dovidio, & Gaertner, 1999).

A questionable way of changing bias is through suppression of personal bias. This technique can make it easier to access negative thoughts about different groups when suppression is not being used, but the intent is to constantly and routinely suppress these thoughts so that it occurs automatically (Hewstone, Rubin, & Willis, 2002). Another method is through explicit retraining (Hewstone, Rubin, & Willis, 2002). This is, however, impractical and laborious and change in attitudes may not be permanent (Hewstone, Rubin, & Willis, 2002).

Another way to reduce bias is through intergroup contact (Dovidio, & Gaertner, 1999). Cooperation is a powerful way to reduce ingroup bias (Dovidio, & Gaertner, 1999). This works in specific cases in which a project is successfully completed, group additions are seen as ancillary and the reciprocal action is friendly and selfless (Dovidio, & Gaertner, 1999). According to Marilyn Brewer, humans have evolved to rely on one another. In order to survive, we have to depend on each other for shared resources, knowledge, information and assistance and we have to be willing to give these things as well (Brewer, 1999).

All of this relies on trust and benevolence is contingent on the possibility that others will cooperate too. Creating and maintaining group boundaries is an effective way of increasing cooperation for mutual goals while minimizing the cost of having to help everyone (Brewer, 1999). The belief that others will cooperate increases attraction between ingroup members and incites faithfulness to ingroup norms. This adherence makes it so that not just anyone will be seen as an ingroup member (Brewer, 1999). This is important



to ensure that resources reserved for an ingroup will not expanded to outgroup members (Brewer, 1999).

Intergroup contact reduces bias by increasing knowledge of how other groups operate and interact while reducing anxiety and increasing empathy (Hewstone, Rubin, & Willis, 2002). There are three main types of categorization. The first is decategorization which assists in eradicating categorization through two cognitive processes (Hewstone, Rubin, & Willis, 2002). These two processes are differentiation which is when differences are created between outgroup members and personalization which is when members of the outgroup are seen through the filter of uniqueness and compared to the self (Hewstone, Rubin, & Willis, 2002). Decategorization attempts to reduce bias by changing former ingroup members to outgroup members and therefore reducing ingroup favoritism and it seeks to break up group homogeneity in order to see groups for their individual members (Brewer, 1996). When the ingroup interacts with the outgroup, they are able to see each person's unique characteristics which can dispel stereotypes and therefore reduce intergroup bias (Brewer, 1996).

The next type of categorization is recategorization (Hewstone, Rubin, & Willis, 2002). Recategorization is changing the definition of the in-group (Crisp, Catriona, & Hall, 2006). For example, changing "us" and "them" to "we" (Crisp et al., 2006). This conversion decreases bias by increasing the appeal of the outgroup and can be accomplished by simply having different groups cooperate or changing segregated seating into integrated seating (Crisp et al., 2006). This makes people believe they are a member of one group rather than separate and different cohorts (Crisp et al., 2006). Evidence that

this approach can be successful is found in experiments in which group salience is manipulated. For example, experiments in which the superordinate group is identified with a symbol or “team colors” while reducing subgroup salience through absorption into the superordinate group (Brewer, 1996).

There is, however, some evidence that recategorization is seen as a threat and therefore causes an increase in ingroup favoritism (Crisp et al., 2006). An experiment that illustrates this idea is one in which university students were told they were going to be integrated into a program at a rival university. The idea that these university students would be absorbed into another identity motivated the need for distinctiveness, which only increased intergroup bias (Crisp et al., 2006). That being said, it only increased intergroup bias for those students who were high group identifiers. High identifiers are those members of a group who are very committed to and strongly identify with the ingroup (Crisp et al., 2006). Additionally, recategorization may not work in a situation in which racial stereotyping and bias is powerful and rigid (Hewstone, Rubin, & Willis, 2002).

The final approach is maintaining differentiation by protecting it (Hewstone, Rubin, & Willis, 2002). This is called subcategorization (Brewer, 1996). There are two crucial components: The differences of group boundaries should be conserved throughout contact in order to increase generalization across members of the outgroup and each group should be unique in terms of the skillfulness it adds to the circumstance resulting in a synergistic intergroup differentiation (Hewstone, Rubin, & Willis, 2002).

## Dual Identities

It is important to remember that individuals can be members of more than one identity and that the creation of a superordinate identity does not demand that people relinquish their previous group identity; group members may consider themselves to be members of more than one identity (Dovidio, & Gaertner, 1999). The dual identity model attempts to reduce bias between groups by strengthening the superordinate group membership rather than emphasizing intragroup differences (Hewstone, Rubin, & Willis, 2002). Since subgroup members are a part of the same superordinate group, motivations to differentiate themselves should be stifled (Hewstone, Rubin, & Willis, 2002).

Having a dual identity contributes to increases in positive affect across the superordinate group as well as reduction in bias (Hewstone, Rubin, & Willis, 2002). An example of this is in the Disney film “We are the Titans”. This movie takes place in the sixties and features a football team that plays for a school that is being racially integrated. While the school has issues and altercations between races, the football team unites and plays together because even though they are part of two subgroups, blacks and whites, they are members of the school’s football team, which in this case, is the superordinate group.

One problem for this dual-identity model is that groups may differ in what preference they have for ingroup relations to accept. Superior majority groups prefer to assimilate while minority groups tend to favor “pluralistic integration” (Hewstone, Rubin, & Willis, 2002 p. 592). Due to this, bias reduction will not occur because a dual identity will be more effective for the minority group but not for the majority group (Hewstone, Rubin, & Willis, 2002). An effective superordinate identity must be able to include and

support group differences in a dynamic way rather than catering to only one subgroup. That being stated, subgroups tend to be stronger, more constant and resistant than superordinate groups (Hewstone, Rubin, & Willis, 2002),

Crossed categorization, is when members can be contemporaneously classified on more than one dimension (Hewstone, Rubin, & Willis, 2002). Mutual categorization reduces bias by being more inclusive of different groups, lowers importance of group boundaries, increases appreciation of the outgroup, increases categorization of others based on multiple dimensions and increases the interaction and trust across the different group boundaries (Hewstone, Rubin, & Willis, 2002). While ethnic and racial identities may be powerful, the idea of a superordinate racial affiliation increases racial trust and acceptance (Dovidio, & Gaertner, 1999).

An example of this is multiracial or multicultural identities (Dovidio, & Gaertner, 1999). These identities can add to the “social adjustment, psychological adaptation, and overall well-being of minority-group members.” (Dovidio, & Gaertner, 1999, p104). There are some questions remaining about how individuals view multiple group membership. First, are people aware of their memberships? Do people view these memberships as separate memberships or do they see themselves as actively part of each group at the same time? Lastly, do people see their main identity as a combination of different identities (Brewer, 1999)?

It has been suggested that there actually is not outgroup hate but rather a preference for the ingroup. To clarify, a preference for the ingroup does not automatically translate into hostility and bias towards the outgroup (Brewer, 1999). Dr. Marilyn Brewer, creator of the optimal distinctiveness theory, believes that, “ingroup favoritism

and outgroup prejudice are separable phenomena and that the origin of identification and attachment to ingroups is independent of intergroup conflict (1999).

When resources are limited, group distinctiveness can be used as a way to prevent hostility among people (Brewer, 1999). The partiality given to ingroup members has more to do with favoritism for the ingroup and deficiency of equal favoritism toward the outgroup (Brewer, 1999). As long as group distinctiveness is preserved, the outgroup can be observed with indifference and even empathy. In other words, “we have our ways and they have their ways.” (Brewer, 1999, p 435). There are several ways in which this can turn in to outright hostility (Brewer, 1999).

The first is through moral superiority (Brewer, 1999). Broadly, the attraction of the ingroup is that an individual is treated better than by the outgroup. The ingroup is seen as more loyal and trustworthy (Brewer, 1999). The social relations within the ingroup are seen as more predictable and favorable than intergroup relations (Brewer, 1999). As the ingroup increases in size, moral power is seen as authoritarian and those that do not follow the same beliefs are regarded with hostility. This gives rise to ethnic cleansing and hatred (Brewer, 1999). Another way hostility is created between groups is through perceived threats (Brewer, 1999). The indifference between ingroups and outgroups may be in circumstances in which there is not a competition for resources or power (Brewer, 1999). According to some research, those that are in the minority and do not have as much control over resources should show more bias against the majority outgroup and stronger ingroup identification (Brewer, 1999).

Another way hostility becomes an issue between groups is through common goals. Among highly distinct groups, ingroups trust one another and cooperation is not a

problem (Brewer, 1999). Within intergroup cooperation, however, that trust is not present and therefore there is an increase in suspicion and so the belief that one group is being taken advantage of grows (Brewer, 1999). Further, when anxiety and fear are already apparent, common threats increase intergroup blame and cooperating with the perceived outgroup begins to blur group boundaries and group distinctiveness begins to fade (Brewer, 1999). This is seen as a threat and may cause the need for distinction to be activated (Brewer, 1999).

When groups collaborate, it can easily turn into competition. In order for outgroup and ingroup cooperation to be successful, one group must view the other group as superior on dimensions they value (Brewer, 1999). Dominant ingroups usually attempt to embellish their positive characteristics while minority groups tend to try to close the gap between themselves and the advantaged group (Brewer, 1999). In this way, ambiguity between the groups is reduced.

### Ambiguity Tolerance

Ambiguity tolerance was first examined in 1948 by Frenkel-Brunswick (Frenkel-Brunswick, 1939). It explains that individuals with low ambiguity tolerance “respond to ambiguous situations, which are considered to involve novelty, complexity, insolubility, unpredictability and uncertainty as a threat or a source of discomfort” (Grenier, Barette,, and Ladouceur, 2005, p 594). With that in mind, there are considered to be three types of reactions that are seen as representing ambiguity tolerance (Grenier, Barette, & Ladouceur, 2005). The first are cognition responses, which seem to show that these individuals view ambiguous circumstances with inflexibility. The second are emotional reactions that point to the individual experiencing feelings of anger, discomfort or anxiety. The last are

behavioral responses such as avoidance of an ambiguous situation (Grenier, Barette, & Ladouceur, 2005).

In addition to the three types of reactions to ambiguous situations to those who do not tolerate those situations well, there are also three interpretations. The first is the definition mentioned earlier: intolerance to insoluble and multi-faceted situations. The second is intolerance for the uncertain which is any situation in which the outcome cannot be foreseen or prepared for. Lastly, there is the idea that ambiguity tolerance is related to prejudice and people's ability to accept diversity among people (McLain, 1993).

Ambiguity tolerance is often viewed as a factor of personality (Furnham and Marks, 2013). These individuals generally prefer situations that are black and white. They do not enjoy situations in which are unfamiliar to them. There is also some research that supports that intolerance to ambiguity can be generalized to other aspects of an individual's personality (Furnham and Marks, 2013). For example, ambiguity intolerance may also shape cognition, social interactions, attitudes and beliefs. In addition to this, ambiguity intolerance has been positively correlated with other personality traits such as authoritarianism, ethnocentrism and dogmatism (Furnham and Marks, 2013).

There are several measures for ambiguity tolerance in an individual. The first one is the Dog-Cat test (Grenier, Barette, & Ladouceur, 2005). It's a series of images in which a dog slowly changes into a cat. Those that are able to hold the original image of the dog the longest were viewed to have a lower tolerance for ambiguity. Most of the tests are self-reports in the form of surveys or questionnaires. Another is the Walk's A scale which has questions such as, "no one can have a feeling of love and hate towards the same person." (Grenier, Barette, & Ladouceur, 2005, p.597). The one that is the most

current and valid is called the MSTAT-I or the Multiple Stimulus Types Ambiguity Tolerance (Grenier, Barette, & Ladouceur, 2005). This is a 22-item scale that features questions such as, “I enjoy the occasional surprise” and “I am good at managing an unpredictable situation” (McLain, 1993).

Ultimately, you receive information from the world around you which is received by your brain. When a situation is interpreted as ambiguous, it’s because there isn’t enough information to make a decision or group it into a mental category that facilitates action. When sufficient information isn’t obtained to make an informed decision or choose a behavioral response, then anxiety can result. This anxiety then triggers cognitive exertion (McLain, Kefallonitis, & Armani, 2015). It could be the case that all individuals may have a little bit of anxiety about ambiguous situation but those who are used to cognitive effort enjoy and therefore seek out ambiguity.

#### Need for Cognition

Need for cognition was first proposed in 1955 by Cohen, Stotland and Wolfe (1955). It postulates that some individuals enjoy thinking and engaging in “effortful thought” (Sadowski, Cyril, and Cogburn, 1997 p. 309). Those with a high need for cognition feel a necessity to understand and make meaning of their world and experiences. In other words, they enjoy learning. It is believed that any time someone with a high need for cognition cannot obtain enough information to fully understand a situation, as is the case with ambiguity, frustration may result.

According to Cohen, Scotland and Wolfe (1955), “Need for cognition may be said to qualify as a need since it directs behavior toward a goal and causes tension when this



goal is not attained.” (p.291). This cognition style is correlated with those that enjoy new experiences (Sadowski, Cyril, and Cogburn, 1997).

There is a possible relationship between need for cognition and ambiguity tolerance. An experiment completed in 1955 showed that those with a high need for cognition do not enjoy ambiguous stories (Cohen, Stotland, and Wolfe, 1955). There are scales that can be used to measure an individual’s need for cognition. (Cohen, Stotland, and Wolfe, 1954). One is called the need for cognition scale and features questions such as “I take pride in the products of my reasoning” and “I tend to set goals that can be accomplished only by expending considerable mental effort” (Cohen, Stotland, and Wolfe, 1954, p 120)

There has been substantial research on need for cognition in regard to persuasive messages. It has been demonstrated that people who have a high need for cognition tend to create opinions about a product, person or idea based on reasoning while those low in need for cognition tend to rely on heuristics and cues such as the attractiveness of the presenter (Cardaba, Brinol, Horcajo and Petty).

When discussing need for cognition, there needs to be mention of the Heuristic Systemic Model and the Elaboration Likelihood model. In the Elaboration Likelihood model, individuals find paying attention easy and are able to thoroughly analyze information. In the Heuristic Systemic Model, people are not able to do so. In this model, they tend to rely on heuristic cues such as how good looking the person speaking is or how well they seem to know information (Haugtvedt & Petty 1992). People who have a high need for cognition have attitudes that linger longer than those with a lower need for cognition. It seems that information obtained by low need for cognition individuals is more

affected by attrition because support for their information is not within their grasps (Haugtvedt & Petty, 1992).

### Essentialism

Essentialism is the belief that certain traits are biologically based. Race and gender are highly essentialized categories as these traits are seen as very distinct, biologically determined and descriptive. People who hold these beliefs believe that there is, for example, a strong and distinct difference between those individuals who are Asian and black and that these differences are permanent and enduring across cultures. Having more essentialized beliefs is related to bias, stereotyping and prejudice, both of which are negative traits. (Young, Sanchez, & Wilton, 2013). Bastian and Haslam (2006) were able to confirm that essentialist beliefs did indeed forecast stereotypes.

Haslam, Rothschild and Ernst found that essentialism consists of several specific components. First, these beliefs tend to be unchanging. They aren't easily altered and they cannot be discarded. Bastian and Haslam (2006) found the same idea whilst doing their research. Essentialist beliefs are also intrinsic and distinct. They are deep-rooted and uncompromising. They are also homogeneous so that members are seen as very similar. Those that hold these essentialist beliefs believe that group-membership is very descriptive of members. Lastly, they hold beliefs that are "historically invariant". That is, their beliefs endure outside of human culture and language (Haslam, 2002).

People generally have "lay theories of race" (Sanchez, Young, & Paulker, 2015). Usually lay theories mean that the individual believes that race is biologically and genetically based (essentialism). People use these lay theories to justify social injustices. It has been found through research that people who have these essentialized lay theories of race

are less likely to interact with those of a different race and are more likely to stereotype those of another race (Sanchez, 2015). In the study by Sanchez, Yound and Paulker (2015), they found that those who are racially ambiguous (hard to tell what race they belong to) challenge genetic lay theories of race.

People who believe that highly essentialized qualities such as race and gender are fixed seem to understand information differently than those who believe these traits can be changed. Entity theorists is the name given to those who believe that traits are the prime cause of actions. Bastian and Haslam (2006) found that entity theorists believed stereotypes were accurate more than incremental theorists (those who believe that traits are malleable). They also showed that entity theorists preferred information that was in line with their stereotypical beliefs (Bastian and Haslam 2007).

Entity theorists also believe that behavior should be consistent (Levy, Stroessner & Dweck, 1998). This reasoning has two major ramifications. First, traits will be seen as very advantageous because they are consistent and anticipated (Levy, 1998). Secondly, since these traits are predictive, then that individual will believe that these traits can be assumed from a snippet of behavior (Levy, 1998). Due to this, entity theorists may willingly predict certain traits from limited views of behavior and make self-assured predictions of behavior on the footing of those traits (Levy, 1998). In comparison, if people believe that traits are changeable, then they can't reliably predict behavior and so this mechanism will not be relied on (Levy, 1998).

In the experiment conducted by Levy, Stroessner and Dweck (1998), they uncovered that entity theorists were more likely than incremental theorists to have stereotypic beliefs. They also found that both entity theorists and incremental theorists were aware of

societal stereotypes but that entity theorists acknowledged these stereotypes more (Levy, 1998). Levy, Stroessner and Dweck also learned that entity theorists had stronger beliefs related to stereotypes, had more descriptors to characterize group members as well as used more intense attributes for the traits they came up with. In addition to this, Levy (1998) found that entity theorists made more intense conclusions about a group based on little information, felt that the information they gathered was good enough to condone their beliefs and they made their judgments more rapidly and they saw members of the groups as homogeneous (Levy, 1998).

One area of study that has to do with essentialism is how people view those who are racially ambiguous, meaning it is difficult to tell what race they belong to. Those that can tolerate racial ambiguity might not see race and gender as being fixed causes of behavior. According to Chen and Hamilton (2012), race is purely social and not biologically based. In their study (Chen & Hamilton 2012), they found that people took longer to choose whether someone was multiracial or monoracial. The reason for this might be that multiracial individuals have an identity that is not as well advanced, not used as often and isn't as easily readily brought to one's mind (Chen & Hamilton, 2012). This makes it a lot harder to be able to choose what race that individual belongs to.

In an article by Plaks, Dweck, Stroessner and Sherman (2001) they outline that people who are trying to find out whether information is in alignment with a stereotypical belief is that first the individual must not focus on the stereotype-conflicting information. They must only focus on the expected stereotypical information thereby gathering only information that is in line with their stereotypical beliefs (2001). Secondly, these individuals must justify the stereotypical information and disparage the inconsistent information

in order to keep their stereotype unscathed (Plaks, 2001). Lastly, individuals may think more about the stereotype conflicting information because it may be more valuable than expected information.

In the research by Williams and Eberhardt (2008), they were curious to see if attributing race to biology would change with whom people choose to associate. In their first study, they wanted to know if telling people that race was based on biology would increase acknowledgment of racial discrepancies and reduce the desire to discuss these discrepancies. This was found to be true. In their second study, they wanted to know if changing the notions of race would change how participants felt about an article on the discrepancies between races. Those that were made to believe that race is a social construction felt more emotion towards the article than those who were made to believe that race is a biologically based (Williams and Eberhardt, 2008). Williams and Eberhardt (2008) also found that those who believed race is biologically based have a less diverse group of friends and less desire to hang out with others outside of their race. Williams and Eberhardt (2008) state that believing that race is a biological construct may be involved in the idea that even though outright anti-black attitudes are not commonly expressed, churches and schools still remain discriminative. Studies have shown that in order to reduce prejudice, intergroup relationships are key. This could also be implicated in the reasoning of why some individuals lack apathy about the racial plight of others (Williams and Eberhardt, 2008). Perhaps they don't see others as connected to them and therefore they don't warrant compassion.

## II. METHODOLOGY

### Purpose of the Current Study

Based on previous research on social identity theory and optimal distinctiveness theory, it does seem that people have a natural inclination to categorize others into groups in order to better understand the world around them and in some ways, this is an important survival tool. Being able to differentiate between a tribe that would typically cause harm and one that was friendly was crucial. Defining features of certain groups of people would mean that an individual would quickly be able to determine whether he or she should fight, flee or welcome this person. This behavior still endures today with sometimes devastating effects.

According to a 2011 survey conducted by the Substance Abuse and Mental Health Services Administration, whites were more likely to have tried most illegal drugs including marijuana and cocaine than blacks (Quicktables, 2011) yet blacks compose 18 percent of those incarcerated compared to 14.5 percent whites. (Carson & Golinelli, 2013). Research by Goff, Jackson, DiLeone, Culotta, & DiTomasso (2014) explores the dehumanization of minorities and especially black children. In their introduction, they bring up historical accounts of the comparison of minority people to animals. Those that have attempted (and unfortunately succeeded) in oppressing minorities have a habit of comparing people to animals. For example, during Hitler's uprising in Germany, Jewish people were compared to vermin, blacks have frequently been compared to apes and primates and immigrants from Mexico coming to the United States have been described as "scurrying over the border" and as hordes (2014). Words are obviously important and especially when describing individuals. In research by Goff, Jackson, DiLeone, Culotta, &

DiTomasso (2014), they identified that black children are interpreted as less innocent than white children. In fact, their research showed that black children were seen as older than whites of the same age. The consequences of this belief might be that black teens could be more likely to be charged as adults in criminal cases. A study conducted by researchers at Stanford University found that white jurors were more likely to hand out harsher sentences to black youths (Donald, 2012). Whites makes up 63 percent of the United States population while Hispanics compose 17 percent and black compose 12.3 percent yet so many statistics demonstrates that minorities are constantly rated higher in ill-descriptive statistics (Kayne, 2013). Obviously something is wrong.

When people categorize others negatively, prejudice can result. Prejudice is widespread, can be difficult to control and results in disastrous outcomes, especially for minorities as outlined in the sprinkling of examples above. Reducing prejudice is important for several reasons. First, prejudice and racism can lead to discrimination which is illegal. Secondly, prejudice interferes with an individual's potential. Prejudice negatively affects people's ability to advance and be successful. If someone is the most qualified for a position but the interviewer or employer is prejudiced, then that could be a catastrophic outcome for that person. If someone can't get a loan on a house due to his or her race, then he or she might get stuck in poor housing in a crime-infested area. All of this can make it harder for someone to escape poverty or unfortunate situations. In addition to this, prejudice could prevent someone from giving to society as a whole. There have probably been brilliant people who missed out on scholarships and opportunities due to their race, culture or sexual orientation. Lastly, racism and prejudice divides people. It keeps people from working together toward a common goal. It separates individuals.

As outlined earlier, much research has been conducted that seems to suggest that people naturally categorize others in order to interpret their surroundings and environment. If this is the case, might there be other traits that could lessen this tendency? People are very different and display a large number of unique traits that cause different behavioral responses and it's one of the reasons people can seem so unpredictable. Need for cognition and tolerance to ambiguity might be a couple of traits that may mitigate categorization of individuals and thus, prejudice. If these traits can lessen prejudice, then further research can be done to enhance these attributes.

Unfortunately, ambiguity tolerance and need for cognition are not as well researched as other more popular traits such as optimal distinctiveness and social identity theory and therefore are not as well understood. The purpose of this study is to learn more about the factors that can lessen prejudice and investigate the relationship between need for cognition, ambiguity tolerance and prejudice.

#### Hypothesis and Expected Outcomes

In the current study, I hypothesize that those who with higher need for cognition and ambiguity tolerance will have less prejudice. In other words, those individuals who can tolerate ambiguity (have higher scores on the MSTAT-I) and who like to learn will be less likely to exhibit prejudicial attitudes. Based on previous research on Need for Cognition, there was support for the idea that those with a higher need for cognition were less likely to rely on heuristics than those with a lower need for cognition when exposed to persuasive messages (Cardaba, Brinol, Horcajo and Petty). Based on that research, it



does seem likely then, that if an individual is using mental shortcuts to understand a message such as attractiveness, then that same individual might use shortcuts to stereotype others as well.

## Proposed Method

### Participants

The sample was comprised of Texas State University undergraduate students. The sample size was over 250 and mirrored Texas State demographics. The exclusion criteria was anyone who did not fully complete the survey. Compensation was in the form of class credit for psychology classes. Students logged in using the SONA system through Texas State's website. The survey was created using Qualtrics software. Answers were completely anonymous. This study was completed after receiving approval from the Institutional Review Board.

### Procedures

The procedure is that the students will take the surveys on Qualtrics and afterwards will be prompted to leave their name for class credit. Participants will not be assigned to conditions. Students took the Multiple Stimulus Types Ambiguity Tolerance (MSTAT-I). After taking the MSTAT-I, participants took the need for cognition scale which measures how much an individual enjoyed learning about new concepts. After that, they took the Quick Discrimination Index. Finally, students were asked about basic demographic information. They were asked for level of education, marital status, income level, ethnicity, and age.

## Measures

Multiple Stimulus Type Ambiguity Test (MSTAT-1) - The Multiple Stimulus Type Ambiguity Test (McLain, 1993) is a 22-item questionnaire designed to analyze an individual's tolerance to ambiguity. It is designed as a seven-point scale from 1= strongly disagree to 7= strongly agree. Examples of statement include "I don't tolerate ambiguous situations well" and "I prefer familiar situations to new ones". Cronbach's alpha for the 22-item MSTAT-1 was .86 (.469). Unfortunately, research on the MSTAT-1 is lacking and so this research will be a welcome addition to its background.

Need for Cognition Scale - The need for cognition scale consists of 34 items and is used to measure how much an individual enjoys learning. It is a Likert scale ranging from -4 (very strong disagreement) to +4 (very strong agreement). Some examples of statements include "Learning new ways to think doesn't excite me very much" and "I only think as hard as I have to". As mentioned earlier, the need for cognition scale was developed by John Cacioppo and Richard Petty in 1982 (1982). Before they created the scale, they looked at past research completed by Cohen (Cohen, Stotland, & Wolfe, 1955) to determine what questions to ask. Cohen, Stotland, & Wolf previously used the situations checklist and the hierarchy of needs scale (1955). The situations checklist is a multiple choice test that asks about various speculative situations and asks the individual to respond. The hierarchy of needs measure asks respondents questions in five areas: achievement, affiliation, autonomy, recognition and cognition (Cohen, Stotland, & Wolfe, 1955). Cacioppo and Petty looked to these scales for inspiration but developed their own (1982).

Cacioppo and Petty first came up with statements that they felt were applicable for need for cognition. Then, they discarded any statements that were unclear and finally

they administered their newly minted scale to participants to determine whether it seemed to actually measure need for cognition and internal validity was measured. Any questions that weren't significant ( $p < .01$ ) were eliminated (Cacioppo and Petty, 1982). The version being used for this study is the initial scale developed by Cacioppo and Petty. Cronbach alpha for the original 34-item Need for Cognition scale is .91 (Cacioppo, Petty, & Kao, 1984).

Quick Discrimination Index - This questionnaire has 30 items and is on a four-point Likert scale. Individuals can respond on a scale from -4 (strongly disagree) to +4 (strongly agree). Examples of statements on this scale are "My friendship network is very racially mixed" and "Overall, I think racial minorities in America complain too much about racial discrimination."

The Quick Discrimination Index (or QDI for short) was developed in 1995 by Joseph Ponterotto, Alan Burkard, Brian Reiger and Ingrid Grieger in order to fill void of an accurate test to measure prejudice. They noted that previously most researchers were interested in reducing prejudice rather than measuring it with accuracy (Ponterotto, Burkard, Reiger, & Greiger, 1995).

Before creating the scale, the researchers thought about the limitations to measuring prejudice. First, they realized that prejudice attitudes are not unidimensional. They consist of behaviors, emotions and thoughts. Creating a scale that could measure all of these components would prove difficult (Ponterotto, Burkard, Reiger, & Greiger, 1995). Second, most measures are specifically aimed at analyzing the prejudices of whites towards blacks which does make sense due to United States history, but it is important to create a scale that could scale various ethnicities (Ponterotto, Burkard, Reiger, & Greiger,

1995). Finally, other scales at the time were either incredibly long or incredibly short and vulnerable to social desirability (Ponterotto, Burkard, Reiger, & Greiger, 1995).

The statements used in the QDI were gathered from previous research on prejudice and discrimination. The researchers attempted to create statements that measured prejudice multidimensionally and their first attempt yielded 40 items (Ponterotto, Burkard, Reiger, & Greiger, 1995). Due to high potential for social desirability to be a factor, the researchers decided to reverse score half of the questions and the title on the initial test states “Social Attitude Survey” rather than Quick Discrimination Index (Ponterotto, Burkard, Reiger, & Greiger, 1995). For content validity measurements, five experts reviewed the measure to make sure that it measures what it’s supposed to measure. Finally, the QDI was administered to a focus group which the consensus was that the scale was well-written and fulfilled its purpose (Ponterotto, Burkard, Reiger, & Greiger, 1995). Cronbach’s alpha for the QDI is .89 (Ponterotto, Burkard, Reiger, & Greiger, 1995). One very important thing to keep in mind about the QDI is that it consists of three subscales. The first sub scale measures cognitive attitudes towards race, the second measures affective attitudes towards racial diversity and the third measure attitudes about women’s fairness (Ponterotto, Utsey, S. O. & Pedersen, 2006). Unfortunately, there is conflicting information on whether or not the QDI subscales can be analyzed separately. According to Poterotto, Potere, & Johansen, 2002, “If a researcher is interested in using just two race-based subscales or only the Gender Attitudes subscale, it is recommended, nonetheless, that the entire QDI be administered and scored” (p205). This is because the individual subclass has not been validated. Interestingly, according to the same prime developer of the scale, it is suggested that the subscales can be administered separately (Ponterotto,

Utsey, & Pedersen, 2006). Due to this, both methods will be applied and results presented for each. It is important to note that lower scores on this index mean higher amounts of prejudice.

## Results

Preliminary reliability analyses were executed and all three scales had robust internal consistency. The Need for Cognition scale consists of 45 items ( $\alpha = .92$ ). The MSTAT-I has 22 items and has a Cronbach's alpha of .86 which is strong. The Quick Discrimination Index includes 29 items ( $\alpha = .85$ ). One question was discarded from the Quick Discrimination Index because it was no longer relevant. It stated that "It upsets me (or angers) me that a minority person has never been president of the United States" (Mclain, 1993). A multiple regression was used to investigate the effect of Need for Cognition, Ambiguity Tolerance and their interaction on prejudice (Quick Discrimination Index). Need for Cognition is a significant predictor of prejudice,  $\beta = .286$ ,  $p < .001$ ,  $R^2 = .051$ . Higher need for cognition predicts less prejudice. Ambiguity Tolerance did not significantly predict prejudice,  $\beta = -.021$ ,  $p > .05$ ,  $R^2 = .000$ . The interaction effect between ambiguity tolerance and need for cognition was not significant,  $\beta = -.003$ ,  $p > .05$ ,  $R^2 = .000$ .

A multiple regression was also executed for the three race subscales of the QDI as well. For the subscale based on affective attitudes towards race, there was a significant finding for Need for Cognition,  $\beta = .164$ ,  $p < .05$ ,  $R^2 = .016$  but there was no significance for the MSTAT-1,  $\beta = -.092$ ,  $p > .05$ ,  $R^2 = .005$ . There also was not a significant interaction between Need for Cognition and ambiguity tolerance,  $\beta = -.092$ ,  $p > .05$ ,  $R^3 = .008$ . There were not any significant results for the subscale based on cognitive attitudes towards race. Ambiguity tolerance was not a predictor,  $\beta = -.040$ ,  $p > .05$ ,  $R^2 = .001$ . Need for Cognition

also lacked a significant result,  $\beta = -.002$ ,  $p > .05$ ,  $R^2 = .000$ . Additionally, there weren't any significant interactions,  $\beta = .017$ ,  $p > .05$ ,  $R^2 = .000$ .

Moreover, a multiple regression was used to explore the combined subscales for race (both affective and cognitive). Need for Cognition is not a significant predictor of prejudice,  $\beta = .134$ ,  $p > .05$ ,  $R^2 = .005$ . Ambiguity tolerance is not a significant predictor of prejudice,  $\beta = .094$ ,  $p > .05$ ,  $R^2 = .005$ . There was not a significant interaction between Need for Cognition and Ambiguity Tolerance,  $\beta = -.059$ ,  $p > .05$ ,  $R^2 = .003$ .

Finally, a multiple regression was conducted to investigate whether Need for Cognition or Ambiguity Tolerance would predict scores on the women's equity subscale of the Quick Discrimination Index. Need for Cognition was a significant predictor of women's equity,  $\beta = .269$ ,  $p < .001$ ,  $R^2 = .045$ . Ambiguity Tolerance was not a significant predictor,  $\beta = -.039$ ,  $p > .05$ ,  $R^2 = .001$  and there was not a significant interaction between Need for Cognition and Ambiguity Tolerance,  $\beta = -.021$ ,  $p > .05$ ,  $R^2 = .000$ . Moreover, there was a positive correlation between the variables and subscales as can be seen in Table 1.

Table 1

*Correlations of variables and subscales*

	QDIWomen	QDIaff	QDIcog	NFCscored	QDIaffcog	MSTATtotal	QDIscored
QDIWomen	—						
QDIaff	.40**	—					
QDIcog	-.02	-.14	—				
NFCscored	.24**	.20**	.03	—			
QDIaffcog	.30**	.67**	.65**	.18**	—		
MSTATtotal	.14*	.19**	.04	.61**	.17**	—	
QDIscored	.79**	.41**	.24**	.30**	.50**	.20**	—

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

### III. CONSIDERATIONS

#### Discussion

The intent of this study was to determine if there is a relationship between need for cognition, ambiguity tolerance and prejudice as measured by the Quick Discrimination Index. While not all of the findings were significant, there were some promising trends. First, need for cognition is a significant predictor of prejudice. This result confirmed my hypothesis that those who had a score that suggested they had a higher cognitive need would exhibit less prejudice and discriminatory tendencies. Based on previous research on need for cognition, it would seem likely that this would be true. First, according to Sadowski, Cyril, and Cogburn, people with this style of cognition seemed to enjoy new experiences which could possibly include meeting new people (1997). As discussed earlier, one way to reduce prejudice is by working with others and learning about them. Further, it was noted that individuals who had a lower need for cognition tend to rely on heuristic clues when being presented with persuasive messages rather than the actual information (Cardaba, Brinol, Horcajo and Petty).

Need for cognition was a significant predictor of less prejudice for the affective subscale of the QDI but not the cognitive subscale. Perhaps cognitive attitudes may not be as robust as affective attitudes. People who enjoy effortful thinking might be able to think logically about their feelings toward a group of people and realize that they are not accurate or that one individual does not represent an entire group. Need for cognition may not have predicted cognitive attitudes towards race because if someone enjoys learning new information, then maybe that person has more faith in what they learn so that it's more difficult for that person to change his or her mind. Need for cognition was also a

significant predictor for women's equity. One reason this may have been the case is that there may have been more women who participated in the study. According to Texas State's website, 57.9% of students are female (University Demographics, 2016) That being noted, because demographic information was not usable, there is not a way to fully support that this was the case in this study.

Unfortunately, scores on the MSTAT-1 did not predict prejudiced behavior overall or amongst the subscales of the Quick Discrimination Index. This conflicts with my prediction that those who could tolerate more ambiguity would score lower on the Quick Discrimination Index. This could be due to several factors. It could be that tolerance to ambiguity is not related to discrimination or prejudice. Just because someone does not tolerate uncertainty does not mean that he or she would be more prejudiced or act on those prejudices and actively discriminate against another person. It could also be that people do not fully understand what ambiguity is. Some of the questions asked specifically about ambiguity and were worded in way that may have been harder to understand, especially if rushing through them. Finally, ambiguity might not have anything to do with some of the questions on the Quick Discrimination Index such as those pertaining to dating outside of one's race or affirmative action.

#### Limitations

There were several limitations to this study. First, all students were Texas State students and there could have been other variables that may have influenced the results. The results cannot be generalized to the rest of the population because there will be differences between college students and the majority of people in the United States.



Another limitation is that demographic variables collected were not usable in analysis. They were organized in a way that was not conducive to analysis. In the future, it would be best to allow people to write in their ages and ask demographic questions in a different way. Another possible limitation is that social desirability may have been a factor. Participants may have not answered questions truthfully in order to make themselves appear more favorably. Finally, the QDI subscales have not been fully validated and therefore the results cannot be generalized to the general public.

#### Future Studies

Based on the results of this study, there are several areas that I have identified that need to be researched further. First, prejudice is a very large construct. There are many different types of prejudice against many different types of people. The majority of research tends to focus on how whites treat blacks in the United States but there is also prejudice against Muslims, the handicapped, the elderly and the list goes on and on. Examining different types of prejudice might yield different results.

Social desirability was likely involved in this study and in the future, researchers should administer a social desirability scale in addition to the Quick Discrimination Index or another prejudice scale. This would facilitate finding out who is answering truthfully. Next, the Quick Discrimination Index subscales should be fully validated so that they can be used independently in future studies. Finally, a generational and a longitudinal study about the attitudes on the Quick Discrimination Index would be interesting. Following how attitudes change as people age and how they change from generation to generation would be valuable research.

Social identity theory has some areas that can be investigated with regard to both need for cognition and ambiguity tolerance. A scale could be developed to measure people's attitudes towards outgroups and ingroups and if that information could be compared to need for cognition, it might reveal that people with a high need for cognition are less likely to feel a strong connection to their ingroup due to their pension for thinking for themselves. It would also be worth examining the relationship between social identity theory and ambiguity tolerance. According to ambiguity tolerance theory, individuals with a higher tolerance to ambiguity might be more flexible in their thoughts and maybe that translates to a weakened sense of group belonging in that he or she would be less likely to stress importance on the differences between ingroups and outgroups.

Optimal distinctiveness is also an area to be examined in future research. People with a higher need for cognition may be less susceptible to group threats, for example the forceful combining of groups which could result in less fear of the other subgroup and so they may be more willing to cooperate with those who are a member of another group. When researching optimal distinctiveness theory, there was reference to individuals having different thresholds to what triggers them to either assimilate or differentiate themselves from others in the group. It would be fascinating if people with varying degrees of ambiguity tolerance had corresponding levels of thresholds to their optimal distinctiveness. At the time of this study, there is not a scale to measure thresholds of optimal distinctiveness.

## Conclusion

The results of this study demonstrated that need for cognition does seem to be a significant predictor of prejudiced beliefs. The need for cognition scale may be a valid instrument for use in personality testing in various fields in which being unbiased is a necessity. With the amount of news coverage on proper training for police officers, this might be a useful tool in evaluating who is fit to be in that occupation. One must be careful not to over generalize these results and further testing is needed. Future research should focus on testing the validity and reliability of the subscales of the Quick Discrimination Index. It also would be helpful to analyze demographic variables to see potential differences between sex, marriage, age and level of education. Anything that can be done to understand why people hold prejudiced beliefs and assist in changing those beliefs would be helpful to society.

## APPENDIX SECTION

### Appendix A

#### The Multiple Stimulus Types Ambiguity Test

##### MSTAT-I

1. I don't tolerate ambiguous situations well.
2. I find it difficult to respond when faced with an unexpected event.
3. I don't think new situations are any more threatening than familiar situations.
4. I'm drawn to situations which can be interpreted in more than one way.
5. I would rather avoid solving a problem that must be viewed from several different perspectives.
6. I try to avoid situations which are ambiguous.
7. I am good at managing unpredictable situations.
8. I prefer familiar situations to new ones.
9. Problems which cannot be considered from just one point of view are a little threatening.
10. I avoid situations which are too complicated for me to easily understand.
11. I am tolerant of ambiguous situations.
12. I enjoy tackling problems which are complex enough to be ambiguous.
13. I try to avoid problems which don't seem to have only one "best" solution.
14. I often find myself looking for something new, rather than trying to hold things constant in my life.
15. I generally prefer novelty over familiarity.
16. I dislike ambiguous situations.

17. Some problems are so complex that just trying to understand them is fun.
18. I have little trouble coping with unexpected events.
19. I pursue problem situations which are so complex some people call them “mind-boggling”.
20. I find hard to make a choice when the outcome is uncertain.
21. I enjoy an occasional surprise.
22. I prefer a situation in which there is some ambiguity.

## Appendix B

### Quick Discrimination Index

#### QDI

1. I do think it is more appropriate for the mother of a newborn baby, rather than the father, to stay home with the baby (not work) during the first year.
2. It is as easy for women to succeed in business as it is for men.
3. I really think affirmative action programs on college campuses constitute reverse discrimination.
4. I feel I could develop an intimate relationship with someone from a different race.
5. All Americans should learn to speak two languages.
6. It upsets (or angers) me that a woman has never been president of the United States.
7. Generally speaking, men work harder than women.
8. My friendship network is very racially mixed.
9. I am against affirmative action programs in business.
10. Generally, men seem less concerned with building relationships than women.
11. I would feel O.K. about my son or daughter dating someone from a different racial group.
12. It upsets (or angers) me that a racial minority person has never been president of the United States.
13. In the past few years there has been too much attention directed toward multicultural or minority issues in education.

14. I think feminist perspectives should be an integral part of the higher education curriculum.
15. Most of my close friends are from my own racial group.
16. I feel somewhat more secure that a man rather than a woman is currently president of the United States.
17. I think that it is (or would be) important for my children to attend schools that are racially mixed.
18. In the past few years there has been too much attention directed multicultural or minority issues in business.
19. Overall, I think racial minorities in America complain too much about racial discrimination.
20. I feel (or would feel) very comfortable having a woman as my primary physician.
21. I think the president of the United States should make a concentrated effort to appoint more women and racial minorities to the country's Supreme Court.
22. I think White people's racism toward racial minority groups still constitutes a major problem in America.
23. I think the school system, from elementary school through college, should encourage minority and immigrant children to learn and fully adopt traditional American values.
24. If I were to adopt a child, I would be happy to adopt a child of any race.
25. I think there is as much female physical violence toward men as there is male violence toward women.

26. I think the school system, from elementary school through college, should promote values representative of diverse cultures.
27. I believe that reading the autobiography of Malcolm X would be of value.
28. I would enjoy living in a neighborhood consisting of a racially diverse population (i.e., African American, Asian American, Hispanic, White).
29. I think it is better if people marry within their own race.
30. Women make too big of a deal out of sexual harassment in the workplace.



## Appendix C

### Need for Cognition Scale

#### NFC

1. I really enjoy a task that involves coming up with new solutions to problems.
2. I believe that if I think hard enough, I will be able to achieve my goals in life.
3. I am very optimistic about my mental abilities.
4. I would prefer a task that is intellectual, difficult and important to one that is somewhat important but does not require much thought.
5. I tend to set goals that can be accomplished only like spending considerable mental effort.
6. When something I read confuses me, I just put it down in forget it.
7. I take pride in the products of my reasoning.
8. I don't usually think about problems that others have found to be difficult.
9. I am usually tempted to put more thought into a task than the job minimally requires.
10. Learning new ways to think doesn't excite me very much.
11. I am hesitant about making important decisions after thinking about them.
12. I usually end up deliberating about issues even when they do not affect me personally.
13. I prefer just to let things happen rather than try to understand why they turned out that way.
14. I have difficulty thinking in new and unfamiliar situation.

15. The idea of relying on thought to make my way to the top does not appealed to me.
16. The notion of thinking abstractly is not appealing to me.
17. I am an intellectual.
18. I find it especially satisfying to complete an important task that required a lot thinking and mental effort.
19. I only think as hard as I have to.
20. I don't reason well under pressure.
21. I like tasks that require little thought once I've learned them.
22. I preferred to think about small, daily-projects to long-term ones.
23. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.
24. I find little satisfaction in deliberating hard and for long hours.
25. I think primarily because I have to.
26. I more often talk with other people about the reasons for and possible solutions to international problems than about gossip or tidbits of what famous people are doing.
27. These days, I see little chance for performing well, even in "intellectual" jobs, unless one knows the right people.
28. More often than not, more thinking just leads to more errors.
29. I don't like to have the responsibility of handling a situation that requires a lot of thinking.

30. I appreciate opportunities to discover the strengths and weaknesses of my own reasoning.
31. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.
32. Thinking is not my idea of fun.
33. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.
34. I don't like to be responsible for thinking of what I should be doing with my life.
35. I prefer watching educational to entertainment programs.
36. I often succeed in solving difficult problems that I set out to solve.
37. I think best when those around me are very intelligent.
38. I am not satisfied unless I am thinking.
39. I prefer my life to be filled with puzzles that I must solve.
40. I would prefer complex to simple problems.
41. Simply knowing the answer rather than understanding the reasons for the answer to a problem is fine with me.
42. When I am figuring out a problem, what I see as the solution to a problem is more important than what others believe or say is the solution.
43. It's enough for me that something gets the job done, I don't care how why it works.
44. Ignorance is bliss.
45. I enjoy speaking about an issue even when the results of my thoughts will have no effect on the outcome of the issue.

## Appendix D

### Demographic Questions

1. What is your age?
  - 18-24
  - 25-34
  - 35-44
  - 45 and up
  
2. What is your ethnicity?
  - White, Hispanic or Latino
  - Black or African American
  - Native American or Pacific Islander
  - Other
  
3. What is your level of education?
  - Trade/Technical/Vocational training
  - Associate Degree
  - Bachelor's Degree
  - Master's Degree
  - Doctorate Degree
  
4. What is your marital status?
  - Single
  - Married or domestic partnership
  - Widowed
  - Divorced

-Separated

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