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The Influence (Or Lack Thereof) Of Stereotypes On Spontaneous Trait Inferences

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Abstract

Research has shown that people spontaneously make trait inferences from observing others perform behaviors. The present research presents two experiments that examined the influence of stereotypes on spontaneous trait inferences. Experiment 1 utilized the recognition probe paradigm, a traditional method of assessing spontaneous trait inferences. Experiment 2 controlled for potential biases (e.g. priming effects and linguistic properties) by modifying the recognition probe paradigm. Results showed support for spontaneous trait inferences only with the traditional recognition probe paradigm. Stereotypes only influenced the accuracy of spontaneous trait inferences with the traditional recognition probe paradigm. The current results suggest that the traditional recognition probe paradigm does not account for priming effect nor linguistic properties that influence the detection of spontaneous trait inferences.

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Chapter 1: Introduction

The Influence (or lack thereof) of Stereotypes on Spontaneous Trait Inferences

Person perception refers to forming impressions of others based on information that is available (Agerström & Rooth, 2011; Asch, 1946; Fiske, 1980; Winter & Uleman, 1984). Impressions can be made from surface characteristics such as someone's gender, facial expression, or perceived ethnicity (Andersen & Klatzky, 1987; Hehman, Sutherland, Flake, & Slepian, 2017; Reis, Nezlek, & Wheeler, 1980) as well as from information that can be inferred about a person such as social stereotypes or group expectations (Blair, Judd, Sadler, & Jenkins, 2002; Cantor, Mischel, & Schwartz, 1982; Snyder & Uranowitz, 1978; Reis, Senchak, & Solomon, 1985). Two important aspects of person perception are spontaneous trait inferences and stereotypes. When we see someone perform a behavior, we automatically make spontaneous trait inferences (Carlston & Skowronski, 1994; Schneid, Carlston, & Skowronski, 2015; Todorov & Uleman, 2004; Uleman, Saribay, & Gonzalez, 2008; Wigboldus, Dijksterhuis, & Van Knippenberg, 2003). Specifically, we assume character traits about the person that align with the behavior we observed. These trait inferences are then encoded into memory and used to help predict that person's future behavior (Uleman, Hon, Roman, & Moskowitz, 1996; Winter & Uleman, 1984). For example, after seeing Paul hit a sales woman, we might predict he is aggressive and likely to behave aggressively in the future.

Stereotyping is also an automatic, unconscious process that people use to try and predict behaviors of other individuals based on available information about their social group (Hamilton, et al., 2015; Uleman et al., 2008; Wigboldus et al., 2003; Yan, Wang, & Zhang, 2012). Stereotypes are characteristics we use to describe others that are based on previously learned social information regarding group membership (Augoustinos & Walker, 1998; Banaji, Hardin,

& Rothman, 1993; Lippmann, 1922). Social information is encoded into long term memory and is accessed quickly when we meet new individuals (Banaji, Hardin, & Rothman, 1993; Devine, 1989; Sherman 1996). Characteristics regarding group membership, such as trait information, is then applied to individuals we believe belong to that group (Hooper, Sharpe, & Roberts, 2016; Koenig & Eagly, 2014; Waroquier & Klein, 2013). Stereotypes and spontaneous trait inferences both influence person perception (Wigboldus, et al., 2003; Yan, Wang, & Zhang, 2012). Both processes rely on making judgements about others based on observations and social knowledge (Hamilton, et al., 2015; Wigboldus, et al., 2003; Yan, Wang, & Zhang, 2012).

The primary goal of the proposed research is to replicate and extend research on the influence of stereotypes on spontaneous trait inferences. The first experiment attempted to conceptually replicate a previous study that suggested that stereotypes (primarily social ones) influenced spontaneous trait inferences (Wigboldus et al., 2003). The second experiment assessed if spontaneous trait inferences may be expanded to other classes of stereotypes by assessing the effects of racial/ethnic stereotypes on spontaneous trait inferences.

1.1 Spontaneous Trait Inferences

Spontaneous trait inferences (STIs) occur when character traits are inferred based on of observed behavior (Schneid, Crawford, Skowronski, Irwin, & Carlston, 2015; Wigboldus, et al., 2003; Yan, Wang, Zhang, 2012). For example, if we see Joe stealing a wallet, we might infer that he is dishonest. We can then use this information to predict Joe's future behavior. Because Joe was dishonest in the past, we predict that he will behave dishonestly in the future. This process occurs regardless of our explicit intention to classify others, therefore, STIs are implicit, unconscious processes (Uleman, Newman, & Moskowitz, 1996; Wang & Fang, 2017; Winter & Uleman, 1984). Empirical evidence for STIs has been gathered using research paradigms such as

the cued recall task (e.g. Winter and Uleman, 1984), relearning paradigm (e.g. Carlston & Skowronski, 1994), false recognition probe paradigm (e.g. Todorov & Uleman, 2002) and the recognition probe paradigm (e.g. Wigboldus, et al., 2003).

The recognition probe paradigm is an effective way of measuring STIs (McKoon & Ratcliff, 1986; Wigboldus, et al., 2003; Wigboldus, Sherman, & van Knippenberg, 2004; Yan, et al., 2012). An advantage of the recognition probe paradigm, relative to some other paradigms, is that the recognition probe paradigm gauges the automaticity of trait inferences while the others tap into the formation of trait inferences. The recognition probe paradigm is a categorization task in which participants read sentences about others and then categorize probe words presented after as being present (e.g. "John stole the wallet" followed by the probe "stole") or absent (e.g. "John stole the wallet" followed by the probe "dishonest") from the preceding sentence. On critical trials, the sentences describe a behavior that implies a trait about a target individual (e.g., "John stole the wallet" implies dishonest). Spontaneous trait inferencing is assumed to have occurred when reaction times to probes that are implied by the sentence are slower relative to probes that are not implied by the sentence (Uleman, Newman, & Moskowitz, 1996; Wigboldus, et al., 2003). For example, McKoon & Ratcliff (1986) presented participants with the trait implying sentence "She couldn't get herself to greet her new neighbor." After reading this sentence, participants were presented with the probe "shy." The time it took to indicate "shy" was not in the sentence was slow because the behavior in the sentence implies being shy. Therefore, STIs occur at the encoding of a sentence. Once we encode an observed behavior, the trait is activated in memory and interferes with performance on the probe task (Uleman et al., 1996; Wigboldus et al., 2003).

1.2 Stereotypes

Much like spontaneous trait inferences, stereotypes are automatic associations we assign to a social group or individual (Augoustinos & Walker, 1998; Banaji, Hardin, & Rothman, 1993; Lippmann, 1922). General beliefs about members of a group are learned and then applied to specific individuals (Hooper, et al., 2016; Koenig & Eagly, 2014; Waroquier & Klein, 2013). For example, some commonly known stereotypes are Asians are excellent mathematicians, women are poor at mathematics, Hispanic men are macho, and Black men are athletic (Dovidio, Evans, & Tyler, 1984; Franceschini, Galli, Chiesi, Primi, 2013; Spencer, Steele, & Quinn, 1999). These associations affect impression formation and can be expressed in terms of characteristics (e.g. character traits) about an individual or their social group (Dovidio, et al., 1984; Rudman & Phelan, 2010). Once associations are made about an individual or social group, that trait information allows us to form impressions that are subsequently encoded and organized within our memory (Kunda & Thagard, 1996; Srull & Wyer, 1989).

Stereotypes are automatically activated when we meet new people (Devine, 1989). People detect group membership such as someone's gender, age, or ethnicity within milliseconds of seeing them (Fiske, 1998). As long as group membership is salient, trait information will automatically be retrieved and activated when we encounter someone new (Fiske, 1998; Devine, 1989). For example, upon meeting Mary we might activate traits that are consistent for females and infer that she is emotional because women are stereotyped as emotional (Yan, et al., 2012). This stereotyping process is similar to spontaneous trait inferencing because information is automatically activated based off our immediate impression of someone (McKoon & Ratcliff, 1986; Wigboldus, et al., 2003; Yan, et al., 2012). Both processes are automatic and occur when information about others has been encoded (Uleman et al., 1996; Wigboldus et al., 2003). Thus,

stereotypes might influence spontaneous trait inferences such that when we observe expected behaviors, trait information (i.e. stereotypes) is accessed quicker.

1.3 Stereotypes and STIs

To date, two studies have shown that stereotypes influence spontaneous trait inferences (Wigboldus et al., 2003; Yan, et al., 2012). When we observe behaviors that are stereotypic, spontaneous trait inferences are made quicker compared to when we observe behaviors that are inconsistent with stereotypes (Wigboldus et al., 2003; Winter & Uleman, 1984; Yan, et al., 2012). For example, Wigboldus, et. al. (2003), used a modified version of the recognition probe paradigm. Participants were presented with sentences that described behaviors that were either stereotype consistent or stereotype inconsistent for target individuals. After the sentence, participants categorized probe words as either being present or absent from the sentence. To measure STI, response times to probes that were stereotypic traits were compared to probes that were not stereotypic traits. Critical probes were implied by the sentence but not presented within the sentence[1]. Stereotypes are said to influence STIs when reaction times to consistent stereotype probes are slower than reaction times to stereotype inconsistent probes. For example, participants were presented with the sentences "The skinhead (girl) hit the sales woman" followed by the probe "aggressive". This sentence implies the trait aggressive and in one case (skinhead) is stereotype consistent and in another (girl) is stereotype inconsistent. Response times to correctly

1 Half of the sentences in the Wigboldus, et al. (2003) study were followed by a word that was in the preceding sentence. These words were included to ensure that participants varied their responses to probes such that sometimes the correct response to the task was "yes, this word was in the sentence" and sometimes the correct response was "no, this word was not presented." Response times to these trials are not theoretically interesting when measuring spontaneous trait inferences and therefore will be discussed further.

categorize “aggressive” as being absent from the sentence were slower when the skinhead was the target compared to when the girl was the target. Slower response times to the skinhead indicated that stereotypes about the target individual were activated (i.e. thugs are aggressive) and therefore influenced STIs.

1.4 Spontaneous Trait Inferences and Ethnic Stereotypes

Previously our lab sought to conceptually replicate and extend the Wigboldus, et al’s (2003) study (Bray, & Crites, 2017). Bray and Crites aimed to assess whether ethnic stereotypes influenced spontaneous trait inferences. For this study, the recognition probe paradigm used by Wigboldus and colleagues, was modified to ensure race was salient by including pictures of target individuals before presenting participants with sentences about those individuals. Participants were told they were first going to see a picture of someone along with their name. After the picture, they read a sentence about the person they saw. Following sentences, probes would sometimes be presented. Their task was to determine if the probe was in the sentence by indicating “yes” or “no” on the keyboard. Results showed slower response times to absent probes implied by the sentence relative to absent probes not implied by the sentence, suggesting that participants engaged in spontaneous trait inferences. However, response latencies were not affected by the trait’s consistency with the ethnic stereotype; response times to stereotype consistent traits were equivalent to response times for stereotype inconsistent traits. There are two potential reasons why the results from Bray and Crites (2017) may not have extended to ethnic stereotypes. The first is the Bray and Crites study examined ethic stereotypes rather than social stereotypes. For example, Wigboldus et al used stereotypes regarding various social roles (e.g. priests are honest, professors are smart, sports fans are rude, etc.) while Bray and Crites used stereotypes regarding Hispanic people (e.g. Hispanic people are hard-working) and Black

people (e.g. Black people are athletic). It may be that social stereotypes have stronger associations compared to ethnic stereotypes. If social stereotypes are stronger than ethnic stereotypes it may be harder to detect their influence on STIs using the recognition probe task. Additionally, the stereotypic traits used in the Bray and Crites study were chosen based off trait uniqueness for targets rather than stereotype strength. For example, one trait that was unique to only Hispanic females was faithful. Other traits, such as proud, were rated more stereotypic than faithful however, these traits were not used because they were also stereotypic for Hispanic and Black men and Black females. Using weaker trait words may not have captured how stereotypes influence spontaneous trait inferences.

A second potential reason Bray and Crites failed to replicate results was issues with priming within the recognition probe task. Utilizing the recognition probe paradigm to assess spontaneous trait inferences may be problematic. The task involves presenting participants with behaviors that imply stereotype consistent and stereotype inconsistent traits. To test the effect of stereotypes on STI, the same sentence is used twice: once to describe a consistent stereotypic trait and once to describe a stereotype inconsistent trait. Identical behaviors are also presented multiple times throughout the task as filler items. Although the targets of the sentence vary, presenting identical behaviors multiple times throughout the experiment may result in priming effects that could potentially facilitate response times. This is problematic because the probes of interest in the task are trait words that are either stereotype consistent or stereotype inconsistent. Stereotypes are said to influence STI when response times to consistent probes are slower than response times to inconsistent probes. Repetition priming might attenuate this effect. Participants might be faster to respond to stereotypic probes because they've seen the sentence before. This

issue may be addressed by limiting the number of times participants view identical sentences within the recognition probe paradigm.

1.5 Present Research

The two experiments of the present study are designed to address the two potential limitations of the Bray and Crites experiments; namely the use of more weakly associated stereotypes and the potential masking of effects from priming. The first experiment conceptually replicated the Wigboldus, et al (2003) experiment and aimed at producing a stronger test of the stereotype effect. The goal of the first experiment was to replicate STI research with stereotypes that have previously been shown to influence the trait inference process. This first experiment therefore, only assessed limitations with stereotype strength and did not assess issues with priming.

The second experiment aimed to address limitations associated with using weak ethnic stereotypes for targets and priming effects within the probe task. Additionally, the second experiment also aimed to explore how individual differences may influence the activation of STIs. Previous research suggests that there are cultural differences in trait activation (Newman, 1991; Newman, 1993; Zárate, Uleman, & Voils, 2001). For example, Zárate and colleagues (2001) showed that individualistic people were more likely to form STIs compared to collectivistic people. To investigate this, Experiment 2 included the 20 statements test (Kuhn & McPartland, 1954). The 20 statements test is a measure of self-construal. Specifically, the 20 statements test assesses whether people tend to think more in terms of traits, social roles, physical descriptions, or abstract thoughts. While there were no a priori predictions for the 20 statements test, we were interested in seeing if a relationship between people who think in terms of traits and STI activation exists.

In line with previous work, we argue that traits will be spontaneously inferred from behaviors that imply traits. When presented with a sentence that implies a trait, participants should show difficulty in correctly categorizing trait probes as being absent from implied sentences. Response times to probes that were implied and absent from the sentence should therefore be slower than response times to probes that were absent but not implied by the sentence. Additionally, we hypothesize that stereotypes will influence the spontaneous trait inferencing process. Participant should show greater difficulty in correctly categorizing stereotypic traits as being absent from implying sentences compared to categorizing stereotype inconsistent traits as being absent from implying sentences.

Chapter 2: Experiment 1

Method[2]

2.1 Participants

The research team recruited students from the University of Texas at El Paso's psychology participant pool. Participants were awarded with partial course credit for their involvement in the study. To estimate the sample size required to achieve adequate power, effect sizes from Bray & Crites (2017) were used to perform an *a priori* power analysis. The power analysis indicated that approximately 100 participants would be needed to achieve adequate power (ANOVA: Repeated measures, within factors, $f = .04$, $\alpha = .05$, $1\text{-}\beta = .80$, correlation among repeated measures = .91, nonsphericity correction = 1; G*Power 3.1.9.2, 2018). To account for possible data loss, a total of 120 participants were recruited for the study. Data from one participant was lost due to a technical error, resulting in a final sample size of 119 participants. Participants were mostly Hispanic (77%) and female (68%) with a mean age of twenty (SD = 3.8).

2.2 Overview and Design

Participants were presented with sentences followed by probes and categorized probes as quickly and accurately as possible as being present or absent from the sentences. Critical STI trials included sentences that implied traits (e.g. "___ helps the handicapped person") and were followed by probes not in the sentence (absent probes). The absent probes that followed the implied sentences were always traits implied by the sentence (e.g. "___ helps the handicapped

[2] Experiment 1 and Experiment 2 were pre-registered into the Open Science Foundation prior to data collection.

person" followed by "helpful"). The second type of sentence used in the task were those that explicitly stated a trait word (e.g. "__ is helpful"). The probes that followed explicit sentences were either present (e.g. "__ is helpful" followed by "helpful") or absent (e.g. "__ is helpful" followed by "helps") from the sentence. The implied sentences followed by absent probes were then compared to explicit sentences followed by absent probes to test if STIs occurred (see Figure 1). Absent trait probes also varied such that half were stereotype consistent descriptors for targets and half were stereotype inconsistent descriptors for targets. To examine whether stereotypes influenced STIs (see Figure 2), implied sentences followed by absent probes that were stereotypic traits for the target (e.g. "The skinhead slapped the waitress" followed by "aggressive") were compared to trials that were implied and followed by absent probes that were stereotype inconsistent traits for the target (e.g. "The girl slapped the waitress" followed by "aggressive"). Because all critical STI trials require an "absent" response from participants, filler trials followed by probes that were present in the sentence (present probes) were also included. Present probes were necessary for the study design and served as manipulation checks. However, present probes were not of theoretical importance[3] and were not used to test spontaneous trait inferences.

Sentences, stereotype content, and probes were equally distributed across trials in a 2(Sentence Type: Trait Implied vs Trait Explicit) X 2(Stereotype: Consistent vs Inconsistent) X

3 This is the design utilized by Wigboldus et al (2003). STI is measured by looking at only the absent probe trials. Present probes were only used to assess accuracy and attention to task instructions. Although the trials of interest include only the absent trials, analyses for this study mimic those performed by Wigboldus et al (2003).

2(Probe: Present vs Absent) within-subjects design. Reaction times and accuracy rates to categorizing probes were recorded.

2.3 Stimuli and Materials

Recognition Probe Paradigm. Participants completed a version of the recognition probe paradigm. The task was programmed using E-Prime 2.0 software (Psychology Software Tools, PA). For the recognition probe paradigm, participants are asked to read sentences and then categorize probe words that follow the sentence as being present or absent from the preceding sentence. In the current experiment, the recognition probe paradigm included three different trial types: experimental trials, filler trials, and non-probe trials. In total, participants completed 144 trials (48 experimental, 48 filler, and 48 non-probe). Experimental trials were used to test whether STIs occurred and whether stereotypes influenced STIs. Filler trials were developed so that participants would not anticipate responding to critical probes (i.e. traits and relevant behaviors). Non-probe trials were included to ensure participants did not anticipate having to respond to a probe word.

Experimental trials. Sentences were derived from Wigboldus, et al. (2003) (see Table 1). Each sentence described traits or actions for a specific target. Targets and their associated traits were pilot tested in an independent sample (N = 32). Participants were asked to rate how stereotypic a trait was for various target pairings. Paired samples t-tests were computed to determine whether traits were more descriptive of stereotype consistent targets compared to stereotype inconsistent targets (see Table 2). Behavioral sentences were also pilot tested to ensure they implied the stereotypic traits. Mean ratings for how well sentences implied target traits were computed (see Table 3).

A total of 48 experimental trials were developed. Half of the trials were implied sentences (24) and half (24) were explicit sentences. For the implied sentences, half (12) were followed by a present probe and half (12) were followed by an absent probe. Additionally, half (6) of implied trials were stereotype consistent and half (6) were stereotype inconsistent.

Filler trials. A total of 48 filler trials were developed to ensure participants paid attention to the individuals being described in the sentences (targets). It was important that participants pay attention to the targets themselves because critical absent probes were traits that were either stereotype consistent or stereotype inconsistent for the target. The filler trials were identical to those used in Wigboldus, et al (2003). Filler trials comprised the same 48 experimental sentences. However, the probes that followed filler sentences varied such that targets served as probes (e.g. "The professor wins the science quiz" followed by "professor"). Participants categorized whether the target presented was in the preceding sentence.

Non-Probe Trials. Non-probe trials developed by Wigboldus, et al (2003) were also included in the experiment. For these trials, participants were not shown a probe word following the sentence. After reading the sentence, a blank screen was presented for 500 milliseconds before the next sentence appeared. These sentences were included to ensure participants did not anticipate having to respond to a probe word. A total of 48 non-probe trials were developed. Sentences mixed targets with the six different sentence ends. For example, the professor was paired with the following sentence ends: "helps the handicapped person", "hits the saleswoman", "shouts at the waiter", "brings back the found purse", and "comes home from work early".

2.4 Procedure

Participants performed a recognition probe task that was structured closely to Wigboldus, et al.'s first experiment (2003). The experiment was advertised as a study on reading speeds. Upon arrival to the lab, participants were instructed to read sentences as quickly as possible. Sometimes probes were presented after the sentence while sometimes sentences were not followed by probes. Participants categorized probes as being absent or present from the sentence by using corresponding keys on the keyboard. Before the experiment started, participants completed two practice rounds. During the first round, every sentence was followed by a probe. The second practice round contained some trials that were followed by a probe and some that were not followed by probes. This method was employed so participants did not anticipate having to respond to probes. All sentences were presented randomly to participants. Sentences were written in black font and probe words that followed sentences were written in blue font. Sentences appeared on the screen for 1000 milliseconds. Probe words were left on the screen until participants responded. After the probe, participants saw a blank screen for 500 milliseconds and were then shown the next sentence. After completing half of the trials, participants were asked to take a two-minute break to prevent fatigue. Following the task, participants completed a demographics form and were debriefed.

2.5 Results

Response times (RTs), recorded in milliseconds, and accuracy rates to correctly categorizing probes were measured. Accuracy was included as a measure to ensure that participants understood the task instructions. However, there were no a priori hypotheses regarding participants' performance on accuracy. Response times served as the primary variable of interest in assessing STIs and the influence of stereotypes on STIs. Before moving forward

with analyses, data was cleaned by accounting for overall trial accuracy, fast response times, and slow response times were assessed.

Overall, participants followed task instructions, as indicated by the low error rate. Data from four participants were excluded from all analyses because their average accuracy rate deviated more than two standard deviations from the group average. To subdue the effects of outlying response times, RTs for each participant were winsorized using techniques common in behavioral science (Reifman & Keyton, 2012). Trials that had RTs faster than 250 milliseconds were also excluded from the analyses. RTs that were slower than two standard deviations from each participant's mean RT were recoded as a value equivalent to two standard deviations from their mean RT. After exclusions and data preparation[4], the final analyzable sample included 115 participants.

To assess the study design, accuracy and RTs were submitted to a 2(Sentence Type: Trait Implied X Trait Explicit) X 2(Stereotype: Consistent vs Inconsistent) X 2(Probe: Present vs Absent) within-subjects ANOVA (see Table 4 and Table 5). The full study design does not assess STIs or the influence of stereotypes on STIs. Appendix A contains supplementary material on the main effects and interactions that are not relevant to the current hypotheses.

STIs. The interaction between sentence type and probe examines STIs. There was a significant interaction between Sentence Type and Probe for both response times ($F(1,114) = 15.958$, $P < .001$) and accuracy ($F(1,114) = 1028.962$, $p < .001$). As predicted, the simple effect

4 The mean accuracy rate across all participants was 91% (SD = 7.2%). Additionally, the STI hypothesis and stereotype hypothesis are tested by examining correct responses. Incorrect responses were minimal (*M* = 8.97%, *SD* = 7.21%) in this experiment. Fast responses were also removed from analyses. Only 4 responses from the entire analyzable sample were removed.

looking at sentence type and probe showed that participants responded slower to absent probes that were implied by sentences (*M* = 1202, *SD* = 376) relative to when they were followed by explicit sentences (*M* = 1157, *SD* = 363), F(1,114) = 7.90, p = .01 (see Figure 3). Participants also responded absent probes that were shown after implied sentences with less accuracy (*M* = 48.9 %, *SD* = 8.5%) relative to absent probes that were shown after explicit sentences (*M* =90.3%, *SD* = 5.3%), F(1,114) = 3349.56, p < .001 (see Figure 4). Overall, participants showed greater difficulty in correctly rejecting absent probes that were traits implied by the sentence compared to correctly rejecting absent probes that were descriptive of relevant traits.

Stereotypes and STIs. The interaction between sentence type, probe, and stereotype examines if stereotypes influence spontaneous trait inferences. Contrary to prediction, the three-way interaction for RTs was non-significant, F(1,114) = .019, p = .892). Participants responded to absent probes that were stereotype consisted and implied by the sentence with equal response times (*M* = 1190, *SD* = 34) compared to absent probes that were stereotype inconsistent and implied by the sentence (*M* = 1213, *SD* = 40). However, there was a significant three-way interaction for accuracy[5], F(1,114) = 1808.03, p < .001. Simple effects analyses showed that participants were less accurate to categorize absent probes that were stereotype consistent and implied by the sentence (*M* = 8%, *SD* = 1.1%) compared to absent probes that were stereotype inconsistent and implied by the sentence (*M* = 89.7%, *SD* = 1.08%), F(1, 114) = 6947.59, p < .001. Therefore, participants showed difficulty in categorizing absent probes that were

[5] This effect is driven from the inclusion of trials involving the trait lazy. A pilot test assessing whether behaviors implied their respective traits showed that the behavior "comes home from work early" did not imply the trait "lazy". When these trials are excluded from analyses, the effect disappears. The trials were included in analyses because they were used in the Wigboldus et al (2003) study.

stereotype consistent relative to absent probes that were stereotype inconsistent, indicating that stereotypes influence how accurately participants infer traits about others.

2.6 Discussion

Response times and accuracy rates were examined. Because we were interested in assessing automatic processing, response times served as the main dependent variable of interest. Previous studies that examined spontaneous trait inferences with the recognition probe paradigm have also used response times to measure STIs (see Wigboldus, et al., 2003 for an example). To test whether STIs occurred, we predicted that response times would be slower when participants had to correctly reject trait words that were implied by behaviors compared to correctly rejecting other relevant words that were not in the sentence read. Results for both accuracy and response times showed support for spontaneous trait inferences. Participants were slower and less accurate when they had to correctly indicate that traits implied by the sentence (e.g. "The thug/girl slapped the waitress" followed by "aggressive") were absent from the sentence read compared to when the absent probes were non-traits (e.g. "The thug/girl is aggressive" followed by "slapped"). Slower response times and less accuracy indicate that participants had difficulty in correctly rejecting absent probes that were traits, presumably because traits were inferred and subsequently activated after reading about the target's behavior.

Additionally, it was hypothesized that stereotypes would influence STIs. We predicted that response times to traits that were stereotypic of the target would be slower relative to trait words that were stereotype inconsistent for the target. Results showed partial support for the stereotype hypothesis. While there was no difference in response times, participants were less accurate with rejecting absent probes that were stereotype consistent for targets (e.g. "The thug slapped the waitress" followed by "aggressive) relative to rejecting absent probes that were

stereotype inconsistent (e.g. “The girl slapped the waitress” followed by “aggressive”). The decrease in accuracy to categorizing stereotypic probes suggests that stereotypes may influence how accurately traits are inferred about others.

Chapter 3: Experiment 2

Experiment 1 showed support for spontaneous trait inferences. Participants inferred traits about individuals from reading behavioral sentences. However, it is possible that the traditional method of testing STIs may bias response times by masking repetition priming and having set timing for stimuli presentation. Addressing these biases may help reveal the stereotype effect that was not found in Experiment 1. For the task, participants were exposed to identical sentences throughout the experiment. This may have encouraged faster response times to all absent probes because participants may have remembered responding to earlier variants of the sentence. Experiment 2 was designed to control repetition priming by ensuring participants encountered unique sentences for every trial in the experiment. In Experiment 2 we sought to test the same hypotheses in Experiment 1 in a more controlled manner. Three changes were made in Experiment 2. First, the sentences were modified by using the same structure and a similar length for both explicit and implied trials. In Experiment 1, implied sentences were always longer than explicit sentences and explicit sentences always ended with a trait word. Second, probes were linguistically controlled for so that all probe words were similar in length and frequency. All experimental probe words in Experiment 1 were either trait words or verbs. Because verbs are used frequently in speech, they are undistinguishable and are not necessary to understand the meaning of the sentence. In order to ensure both types of probes were distinguishable and relevant to the meaning of the sentence, Experiment 2 used nouns and adjectives for probes rather than verbs. Third, the presentation of the sentences was modified. During the first experiment, sentences were left on the screen for a set amount of time. This may have allowed participants to reread the sentences, making it easier to respond to probe words. To account for this potential bias, sentences in Experiment 2 were shown one word at a time. We hypothesized

that spontaneous trait inferences would be activated from observing trait implying behaviors and that stereotypes would influence the trait inference process.

Method

3.1 Participants

The research team recruited participants from the University of Texas at El Paso psychology participant pool. Participants were awarded partial course credit for their involvement in the study. The same effect sizes used to calculate power in Experiment 1 were used to estimate a sample size for Experiment 2. The power analysis indicated that approximately 100 participants would be needed to achieve adequate power ($f = .04$, $\alpha = .05$, $\beta = .80$; G*Power 3.1.9.2, 2018). To account for possible data loss, a total of 120 participants were recruited for the study. Four participants were excluded due to technical errors with the experiment, leaving a final sample size of 116 participants. Of the remaining sample, most were female (63.91%) and identified as Hispanic (82.01%). The mean age for participants was 20 ($SD = 4.53$).

3.2 Design

A 2(Sentence Type: Trait Implied vs Trait Explicit) X 2(Stereotype: Consistent vs Irrelevant) X 2(Probe: Present vs Absent) x 2(Probe Type: Trait vs Non-Trait) within-subjects design was used in Experiment 2. Sentence Type, Stereotype, and Probe were defined as outlined in Experiment 1, with one exception. In Experiment 1 the stereotypes described in sentences were social stereotypes. For Experiment 2, racial/ethnic stereotypes were described in sentences. Racial/ethnic stereotypes were used because they could be made salient by the presentation of target images before sentences. The ethnic stereotypes described in Experiment 2

were either consistent or irrelevant for Black males or Asian males. Two independent samples of participants rated traits for Black men (N = 23) and Asian men (N = 24). Mean trait ratings were computed. Traits were considered stereotypic if their mean rating had a z-score above one. Traits were considered irrelevant if their mean rating had a z-score below zero (see Table 6). Irrelevant traits were used rather than stereotype inconsistent traits because these traits were neutral for the targets. It is hard to imagine what people are "not" therefore, using irrelevant traits for targets served as yet another control. Sentences were further controlled by manipulating the type of probe shown. In Experiment 1, probes were either traits (e.g. "helpful") or behaviors that aligned with the sentence (e.g. "helps"), and all probes that aligned with behaviors were verbs. Because verbs are high frequency words, they are easy to forget. Therefore, in Experiment 2, rather than use verbs, non-trait words were nouns (e.g. "basketball) or adjectives (e.g. "ugly") that were either present in the sentence (e.g. "Jerome plays basketball" followed by "basketball") or absent from the sentence (e.g. "Jerome plays basketball" followed by "baseball"). Reaction times and accuracy rates to categorizing probes were recorded.

3.3 Stimuli and Materials

Twenty Statements Test. The twenty statements test (Kuhn & McPartland, 1954) was used to assess self-construal. Participants responded to the statement "I am" twenty times in a five-minute time frame. Responses were then coded as: 1) physical descriptions, 2) social roles, 3) personality traits, or 4) abstract thoughts by three researchers. Intraclass correlations for each self-construal were computed. Interrater reliability for coding abstract self-construal was poor (ICC = .49). Reliability for physical self-construal (ICC = .68) and trait self-construal (ICC = .70) was moderate. Finally, reliability for social-role self-construal was good (ICC = .88).

Target Stimuli. Participants were shown pictures of targets along with the target's name before reading sentences about those targets. Pictures were used, in conjunction with names, to ensure target race was salient. Participants were shown 69 different targets (one target per trial). Pictures of Black males (69 total) and Asian males (69 total) were presented to participants. The pictures of Black males were gathered from the Chicago Face Database (Ma & Correll, 2015). Pictures of Asian males were compiled from the Chinese University of Hong Kong Face Sketch Database (Wang & Tang, 2009), because the Chicago Face Database did not have 69 different pictures of Asian males. Each target also had a unique name (see Appendix B). Names were gathered from baby name websites that indicated popular Black names and Asian names.

Modified Recognition Probe Paradigm. Participants completed a modified version of the recognition probe paradigm. For the task, participants were first shown a picture of a target along with their name. Afterword, participants were shown sentences one word at a time. After the last word was presented, a screen with a fixation point was displayed. Following the fixation point, participants were either presented with a probe word written in blue font or with a picture of the next target.

A total of 8 counterbalanced conditions were created (4 for Black men and 4 for Asian men). Each condition contained 69 trials (9 practice, 20 experimental, 20 filler, and 20 non-probe). All practice trials, filler trials, and non-probe trials were identical across all conditions. Conditions were created so that participants would see only one variant of each sentence for every stereotypic trait (see Appendix C). Half of the experimental sentences were stereotype consistent (10) and half were stereotype irrelevant (10). Additionally, half of experimental sentences were followed by present probes (10) and half were followed by absent probes (10). Of

all probes presented, half were trait probes (10) and half were non-trait probes (10). All sentences were developed to be similar in length and structure.

Experimental trials. In total, 40 experimental trials were developed (20 for Asians and 20 for Blacks). There were eight types of experimental trials: 1) implied sentences that described stereotype consistent behaviors and were followed by absent probes that were traits, 2) implied sentences that described stereotype irrelevant behaviors and were followed by absent probes that were traits, 3) implied sentences that described stereotype consistent behaviors and followed by absent probes that were non-traits, and 4) implied sentences that described stereotype irrelevant behaviors and were followed by probes that were non-traits, 5) explicit sentences that described stereotype consistent behaviors and were followed by present probes that were traits, 6) explicit sentences that described stereotype irrelevant behaviors and were followed by present probes that were traits, 7) explicit sentences that described stereotype consistent behaviors and were followed by present probes that were non-traits, and 8) explicit sentences that described stereotype irrelevant behaviors and were followed by present probes that were non-traits (see Appendix C).

Each experimental sentence began with the target's name followed by a description that implied either a stereotype consistent or irrelevant trait. After the description, a sentence end was presented. Sentence ends described neutral behaviors. For example, Asian men are stereotyped as smart. The experimental sentence developed for smart was as follows: "[Name] received a 90 on his exam without studying, [Name] decided to go enjoy a beer." The first half of the sentence describes a behavior that implies the target is smart ("received a 90 on his exam without studying"). The second half of the sentence describes a neutral behavior that does not imply stereotypic traits ("decided to go enjoy a beer"). For explicit sentences, the trait word was

presented after the trait implying description and before the sentence end (e.g. "[Name] received a 90 on his exam without studying, [Name] is smart and decided to go enjoy a beer.").

Filler Trials. Twenty filler trials were developed. Filler trials described neutral behaviors that did not imply traits. For all filler trials, the probe word that followed was the target's name. Target names were used as probe words to ensure that participants paid attention to the target themselves. This helped ensure that race was salient when reading experimental sentences.

Non-Probe Trials. Twenty non-probe trials were developed. Non-probe trials described neutral behaviors that did not imply traits. No probe word followed these trials. Instead, participants saw a fixation point then a picture of the next target after these trials. This procedure was used to ensure that participants did not anticipate having to respond to a probe word.

3.4 Procedure

Participants were first asked to complete the twenty statements test. The twenty statements test was programmed using QuestionPro Survey Platform[6]. The test was displayed for a maximum of five minutes. After the five-minute time was up, participants completed a basic demographics form. Following the demographics, participants were randomly assigned to complete one of the eight conditions for the modified version of the recognition probe task.

For the task, participants were told they would see a picture of a person along with their name followed by a sentence about that person. Targets and target names were displayed for

[6] Using QuestionPro to administer the Twenty Statements test was problematic. QuestionPro automatically provides participants with suggestions on what to type for each I am statement. The suggestions were based off previous responses from prior participants. While participants were encouraged to come up with their own answers, some used responses from other participants.

1000 milliseconds. After the target screen was displayed, sentences were displayed one word at a time. Participants were instructed to press the spacebar to advance to the next word. The word stayed on the screen until participants advanced to the next word. The last word in the sentence was followed by a fixation point (displayed for 500 ms). For trials with a probe word, the probe was displayed after the fixation point in blue font. Participants then categorized the probe as being present or absent from the sentence by using corresponding keys on the keyboard. For non-probe trials, the next target was shown after the fixation point. After the task, participants were debriefed and thanked for their time.

3.5 Results

As in Experiment 1, data was cleaned before performing analyses. Participants generally followed the task instructions as indicated by the low error rate (M_{accuracy} =81%, SD = 7%). Data from 5 participants were excluded because their average accuracy rate was less than two standard deviation from the group average. Response times that were slower than two standard deviations from each participant's mean response time were recoded as a value equivalent to two standard deviations from their mean RT. After exclusions and data preparation, the final analyzable sample included 111 participants.

Due to researcher error[7], the 2(Sentence Type: Trait Implied vs Trait Explicit) X 2(Stereotype: Consistent vs Irrelevant) X 2(Probe: Present vs Absent) x 2(Probe Type: Trait vs

[7] Half of the trials were not included in the study due to researcher error. The missing trials include the following: 1) implied sentences that were stereotype consistent and followed by a trait probe that was present, 2) implied sentences that were stereotype consistent and followed by a non-trait probe that was present, 3) implied sentences that were stereotype inconsistent and followed by a trait probe that was present, 4) implied sentences that were stereotype inconsistent and followed by a non-trait probe that was present, 4) explicit sentences that were stereotype consistent and followed by a trait probe that was absent, 5) explicit sentences that were

Non-Trait) within-subjects ANOVA could not be computed. However, the full design is not necessary to test the STI hypothesis nor the influence of stereotypes on STIs. To test the STI hypothesis, responses to absent probes that follow sentences that imply a trait are compared to responses to absent probes that follow sentences in which the trait is explicitly stated (see Figure 5).[8] In Experiment 2, we controlled for probe type such that some were trait words and others were non-traits. To test the STI hypothesis, trials that were implied and followed by absent probes that were traits were compared to trials that were implied and followed by absent probes that were non-traits (see Figure 6) by using a one-way ANOVA. This test was a more direct examination of the STI hypothesis. To assess the stereotype hypothesis, trials that were implied, stereotype consistent, and followed by absent probes that were traits were compared to trials that were stereotype irrelevant and followed by absent probes that were traits. All analyses accounted for the counterbalanced condition participants completed. There were no significant differences in response times or accuracy across counterbalanced conditions.

stereotype consistent and followed by a trait probe that was absent, 6) explicit sentences that were stereotype consistent and followed by a non-trait probe that was absent, 7) explicit sentences that were stereotype inconsistent and followed by a trait probe that was absent, and 8) explicit sentences that were stereotype inconsistent and followed by a non-trait probe that was absent.

[8] STIs are said to occur when response times to absent probes that are implied by the sentence are slower relative to absent probes that were not implied by the sentence. Similarly, to test the effect of stereotypes on STIs, trials that are implied and followed by stereotype consistent absent probes are compared to trials that are implied and followed by stereotype inconsistent probes. Thus, looking at the simple effects for the STI trials listed and the stereotype trials listed is a better way of testing our hypotheses. We tested the full design to maintain consistency with past work. However, follow up analyses looking at the simple effects mentioned above were used to assess our hypotheses.

STIs. The simple effect assessing the STI hypothesis was significant for both response times ($F(1,110) = 56.31$, $p < .001$) and accuracy ($F(1,110) = 46.36$, $p < .001$) (see Figures 7 and 8). Contrary to predictions, participants were faster (not slower as predicted) with categorizing absent probes that were traits implied by the sentence ($M = 1327$, $SD = 483$) relative to absent probes that were non-traits ($M = 1678$, $SD = 615$). Participants were also more accurate when categorizing absent probes that were traits *(*$M = 97.5\%$, $SD = 7.37\%$*)* compared to absent probes that were non-traits *(*$M = 86.7\%$, $SD = 14.75\%$*).* Unlike Experiment 1, participants were more accurate in rejecting probes that were traits implied by the sentence relative to non-trait words that were also absent from the sentence.

Stereotypes and STIs. The simple effect assessing the stereotype hypothesis was non-significant for both response times ($F(1,110) = .09$, $p = .768$) and accuracy ($F(1,110) = .19$, $p = .732$). Participants responded equivalently to stereotype consistent absent trait probes *(*$M = 1312$, $SD = 397$*)* and stereotype irrelevant absent trait probes *(*$M = 1339$, $SD = 483$*).* Participants also performed equally as accurate when categorizing stereotype consistent probes ($M = 97.2\%$, $SD = 8.09\%$) compared to stereotype irrelevant probes ($M = 97.7\%$, $SD = 7.39\%$).

Twenty Statements Test. Correlations between response times to STI trials and coded responses to the Twenty Statements Test were computed. This exploratory analysis aimed to assess the relationship between participants' self-construal and trait inferences. Specifically, we were interested in seeing if the tendency to think about oneself in terms of traits was related to STIs. There were no significant correlations between the four categories of self-construal with response times or accuracy rates (see Table 7).

3.6 Discussion

As in Experiment 1, response times and accuracy rates were examined. To test whether STIs occurred, we predicted that response times would be slower when participants had to correctly reject trait words that were implied by behaviors compared to correctly rejecting other relevant words that were not in the sentence read. Contrary to predictions participants responded slower and less accurate when they had to correctly indicate that non-traits related to the sentence (e.g. “Reggie plays sports in his spare time, Reggie is on the baseball team and lives next door to me.” followed by the word “basketball”) were absent from the sentence read compared to when the absent probes were traits (e.g. “Reggie plays sports in his spare time, Reggie is on the baseball team and lives next door to me.” followed by “athletic”). Slower response times and less accuracy indicate that responding to controlled words was more difficult that responding to trait words, showing no indication of spontaneous trait inferences.

Additionally, it was hypothesized that stereotypes would influence STIs. We predicted that response times to traits that were stereotypic of the target would be slower relative to trait words that were stereotype irrelevant for the target. Results showed no support for the stereotype hypothesis. Participants responded with equal response times and accuracy to rejecting absent probes that were stereotype consistent for targets (e.g. “Reggie plays sports in his spare time, Reggie is on the baseball team and lives next door to me.” followed by “athletic”) relative to rejecting absent probes that were stereotype irrelevant for target (e.g. “Jerome stayed in bed watching movies instead of doing homework, Jerome tried to forget about his list of things to do.” followed by “lazy”).

Chapter 4: General Discussion

The purpose of the current research was to address two potential limitations of the Bray and Crites (2017) experiment-the use of weakly associated stereotypes and the potential for masking priming effects. Experiment 1 aimed to address the use of weakly associated stereotypes while Experiment 2 focused on addressing priming effects. Across both experiments, we hypothesized that traits would be spontaneously inferred from behaviors that imply traits. It was predicted that participants would be slower to responding to absent probes that were traits implied by the sentence compared to absent probes that were non-traits and related to the sentence. Additionally, we hypothesized that stereotypes would be activated from trait implying behaviors and subsequently influence the formation of spontaneous trait inferences. It was predicted that participants would be slower to correctly rejecting absent traits that were stereotype consistent compared to absent traits that were stereotype inconsistent or stereotype irrelevant. In this discussion, each hypothesis will be addressed separately and will be followed by general conclusions.

4.1 Spontaneous Trait Inferences

Results for Experiment 1 showed support for spontaneous trait inferences. Participants were slower to categorize absent probes that were traits implied by sentences relative to absent probes that were not traits, indicating that spontaneous trait inferences occurred. Additionally, participants were less accurate when responding to absent probes that were traits implied by sentences compared to absent probes that were not traits. These findings, along with results from several previous studies (Carlston & Skowronski, 1994; Schneid et al., 2015; Todorov & Uleman, 2004), suggest that social information (i.e. behaviors) automatically elicits trait inferences, regardless of one's intentions to form an impression of someone. For example, actions such as hitting a saleswoman or shouting at a waiter automatically activate trait concepts of aggression and being rude. This activation can be accounted for by the encoding process associated with forming spontaneous trait inferences (Uleman, et al., 1996). Behaviors are strongly tied to

traits, and therefore lead to the activation of trait concepts and the formation of an overall impression of an individual (Todorov & Uleman, 2004).

Although Experiment 1 showed support for STIs, results for Experiment 2 did not. Recall that in Experiment 2, probe words were modified such that absent probes were either traits implied by the sentence or nouns that were related to central parts of the sentence. Modifying probes allowed us to experimentally control for the linguistic properties of the probes (e.g. word frequency and sentence length). After controlling for linguistic properties of the probes, it seems that the magnitude of spontaneous trait inferences was reduced, and in fact reversed. Participants were less accurate and slower to categorize absent probes that were not implied by the sentence relative to absent probes that were trait words implied by the sentence. These results support the Linguistic Category Model (Semin & Fiedler, 1991). The Linguistic Category Model suggests that adjectives and verbs are both important parts of language in forming impressions of others. Semin and Fiedler (1991) suggest that interpersonal verbs (e.g. call, help, admire) and adjectives are used frequently within interpersonal interactions and with interpreting social situations. Therefore, the traditional way of testing STIs with the recognition probe paradigm (i.e. as in Experiment 1) does a poor job of disentangling encoding effects from inferring character traits based off behaviors implied by the sentence with behaviors listed in the sentence. For example, someone might infer that Julie is helpful from her behavior (e.g. "Julie helps the handicapped person") or from the interpersonal verb listed in the sentence itself (e.g. "helps"). Experiment 2 ensured that interpersonal verbs were not used as probe words. Research that uses the traditional recognition probe paradigm, including our own, suffer from this problem. For example, in our first experiment, in Wigboldus et al. (2003), and in Wigboldus, et al., (2004) trait probes such as "aggressive" were compared to interpersonal verbs such as "slapped". While in Experiment 2, trait probes such as "friendly" were compared to neutral nouns and adjectives such as "school" or "ugly" (see Appendix C for a full list of probes). According to the Linguistic content model, both "aggressive" and "slapped" should activate the concept of aggression. Therefore, using "aggressive" and "slapped" to test for trait inferences may be

biased because they both activate the same concept. Thus, it seems that in comparison to controlled words, traits are not spontaneously inferred from behavior, suggesting that language plays a key role in person perception within experimental paradigms that require reading.

4.2 Stereotypes and Spontaneous Trait Inferences

Stereotypes are associations we make and store about individuals and their respective social groups (Augoustinos & Walker, 1998; Banaji, et al., 1993, Lippmann, 1922). Previous studies have shown that stereotypes also influence the spontaneous trait inference process (Wigboldus, et al., 2003; Yan, et al., 2015). When behaviors are consistent or expected for an individual because of the social group they belong to, stereotypes are activated and facilitate the formation of spontaneous trait inferences. So, if we observe both a thug and a girl slapping a saleswoman, then we are more likely to infer that the thug is aggressive compared to the girl because thugs are stereotyped as aggressive. However, across both of our experiments, there was no evidence that stereotypes influenced STIs. Participants were equally as fast and accurate when categorizing absent probes that were stereotype consistent and implied by sentences compared to absent probes that were stereotype inconsistent and implied by sentences. Therefore, participants were just as likely to infer that both the thug and the girl were aggressive if either slapped a saleswoman. The current research employed the same recognition probe paradigm used in previous work looking at the influence of stereotypes on STIs, so these null results are puzzling. Potential limitations for the current research may explain why stereotypes had no influence on STIs.

One reason stereotypes may not have influenced STIs is because social groups may not have been salient and therefore stereotypes were not activated. We did not explicitly ask participants if they attended to the social groups that targets belonged to because research has shown that heuristics such as one's gender, age, or ethnicity activate stereotypes about an individual's social group (Devine, 1989; Fiske, 1998). These same heuristics have been shown to be salient within social perception (e.g. McGraw, Durm, & Durnam, 1989). Using distinguishable target names in Experiment 1 (e.g. boy scout, nurse) and

pictures of targets in Experiment 2 should have made social groups salient. Although there is strong support suggesting that social groups were activated, it is not clear whether participants in our sample did activate social groups. Similarly, the task instructions for the recognition probe paradigm may have resulted in stereotypes not being activated. Stereotypes are typically primed by making social groups salient (Wheeler & Petty, 2001). However, the task instructions for the recognition probe paradigm have participants focus on words within sentences. Therefore, more emphasis may have been put on focusing on the individual words in the sentences rather than the content of the sentence itself. Future studies can address this limitation by instructing participants to focus on the target of sentences and the social groups each target belongs to.

4.3 General Conclusion

This project was the first to address priming issues with the recognition probe paradigm. Using the traditional methodology for the recognition probe paradigm yielded strong support for the formation of STIs. However, after controlling for potential priming effects, the results from this study showed no support for STIs, highlight the importance of controlling for priming and linguistic properties of stimuli with paradigms that rely on reading information about others. Future research should therefore control for priming and linguistic properties within the recognition probe paradigm. Specifically, for the recognition probe paradigm, stimuli should: 1) strictly be adjectives or nouns that do not imply interpersonal relations, 2) be equivalent in terms of sentence length, and 3) control for the position of the probe within the sentence itself. Further research should examine whether spontaneous can be detected after controlling for priming and attempt to replicate previous research that utilized the traditional recognition probe paradigm. Additional research should also examine whether presentation of stimuli influences the formation of STIs. For example, in Experiment 2, sentences were presented one word at a time. This may have created problems with short term memory making it more difficult to categorize probes as either present or absent from the sentence. Varying sentence presentation, or perhaps using eye-tracking to see how participants process sentences can elucidate how differences in presentation may be sensitive to

measuring STI activation. Although previous research has shown strong support for the formation of STIs, new, more controlled methodologies should be utilized to test the automaticity of STIs.

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Table 1: Experimental Trials used in Experiment 1

Sentence Type	Stereotype Consistent (Stereotype Inconsistent)	Absent Probe (Present Probe)
Implied	The **thug** (**girl**) hits the saleswoman.	Aggressive (hits)
Implied	The **professor** (**garbage man**) wins the science quiz.	Smart (wins)
Implied	The **boy scout** (**punk**) helps the handicapped person.	Helpful (helps)
Implied	The **soccer fan** (**nurse**) shouts at the waiter.	Rude (shouts)
Implied	The **priest** (**junkie**) brings back the found purse.	Honest (brings)
Implied	The **stoner** (**manager**) comes home from work early.	Lazy (comes)
Explicit	The **thug** (**girl**) is aggressive.	Hits (aggressive)
Explicit	The **professor** (**garbage man**) is smart.	Wins (smart)
Explicit	The **boy scout** (**punk**) is helpful.	Helps (helpful)
Explicit	The **soccer fan** (**nurse**) is rude.	Shouts (rude)
Explicit	The **priest** (**junkie**) is honest.	Brings (honest)
Explicit	The **stoner** (**manager**) is lazy.	Comes (lazy)

Note. The traits listed in the probe column are stereotype consistent for targets outside of the parentheses and stereotype inconsistent for targets within the parentheses. To test STIs, the implied sentences followed by absent probes (probes outside of parentheses in the probe column) are compared to the explicit sentences followed by absent probes. Only implied sentences followed by absent probes are used to assess whether stereotypes influence STIs. The trials with the targets outside of the parentheses in the sentence column are compared to trials that have the targets listed within the parentheses.

Table 2: Paired Sample t-tests Assessing Stereotypic Trait Ratings for Targets

Consistent Target (*M*, *SD*)	**Inconsistent Target (*M*, *SD*)**	**Trait**	**t**	***df***	***p***
Professor (4.03, 1.79)	Garbage Man (2.81, 1.33)	Smart	3.81	31	.001
Boy Scout (5.03, 1.78)	Punk (2.97, 1.40)	Helpful	4.74	30	< .001
Priest (4.41, 1.74)	Junkie (3.00, 1.57)	Honest	3.15	31	.004
Thug (4.88, 1.86)	Girl (2.84, 1.74)	Aggressive	3.93	31	< .001
Stoner (4.72, 1.78)	Manager (2.84, 1.61)	Lazy	4.20	31	< .001
Sports Fan (4.10, 1.99)	Nurse (2.81, 1.38)	Rude	2.47	30	.020

Note. Participants were asked to provide their level of agreement (1-Strongly Disagree to 7-Strongly Agree) with the following question stem: "A (Consistent Target) compared to an (Inconsistent Target) is (Trait)."

Table 3: Behavioral Sentence Stem Ratings

Sentence Stem	**Mean**	**SD**
"hits the saleswoman" implies the trait aggressive	6.16	1.32
"wins the science quiz" implies the trait smart	5.47	1.39
"helps the handicapped person" implies the trait helpful	5.91	1.45
"shouts at the waiter" implies the trait rude	5.78	1.81
"brings back the found purse" implies the trait honest	5.59	1.83
"comes home from work early" implies the trait lazy	2.50	1.32

Note. Participants were asked to provide their level of agreement with the sentence stems listed above (1-Strongly Disagree to 7-Strongly Agree). The sentence stem "comes home from work early" was not strongly rated as descriptive of the trait "lazy". Although the behavior was not descriptive of its associated trait, the sentence was used in the Experiment. This was done to ensure Experiment 1 was structured as closely as possible to the Wigboldus, et al (2003) study.

Table 4: ANOVA Source Table for Accuracy Rates

Source	*MS* (*MS*$_e$)	*df*	F	*p*	η
Stereotype	.001 (.005)	1	.248	.619	.002
Sentence Type	.176 (.007)	1	24.733	< .001	.178
Probe	.236 (.015)	1	15.451	< .001	.119
Stereotype x Sentence Type	.006 (.006)	1	1.031	< .312	.009
Stereotype x Probe	.000 (.006)	1	0.000	1.00	.000
Sentence Type x Probe	.197 (.007)	1	26.303	< .001	.187
Stereotype x Sentence Type x Probe	.001 (.006)	1	.156	.694	.001

Table 5: ANOVA Source Table for Response Times

Source	*MS* (*MS*$_e$)	*df*	F	*p*	η
Stereotype	616.74 (17690.77)	1	.04	.85	0
Sentence Type	1689582.49 (23953.21)	1	70.54	< .001	.38
Probe	5362616.58 (65372.20)	1	82.03	< .001	.42
Stereotype x Sentence Type	85610.13 (28573.12)	1	3.0	.09	.03
Stereotype x Probe	10217.16 (28028.09)	1	.34	.55	.003
Sentence Type x Probe	395908.82 (24809.59)	1	15.96	< .001	.12
Stereotype x Sentence Type x Probe	339.27 (18309.46)	1	.019	.89	0

Table 6: Mean Trait Ratings for Ethnic/Racial Stereotypes

Black Males			Asian Males		
Trait Type	Trait	Z-score	Trait Type	Trait	Z-score
Stereotype Consistent	Athletic	1.94	Stereotype Consistent	Smart	1.13
Stereotype Consistent	Funny	1.70	Stereotype Consistent	Hard-working	2.90
Stereotype Consistent	Hard-working	1.63	Stereotype Consistent	Disciplined	3.84
Stereotype Consistent	Friendly	1.24	Stereotype Consistent	Skillful	3.82
Stereotype Consistent	Talkative	1.24	Stereotype Consistent	Independent	3.65
Stereotype Consistent	Confident	1.16	Stereotype Consistent	Ambitious	3.62
Stereotype Consistent	Helpful	1.16	Stereotype Consistent	Responsible	3.62
Stereotype Consistent	Leaders	1.16	Stereotype Consistent	Studious	3.52
Stereotype Consistent	Skillful	1.16	Stereotype Consistent	Punctual	3.43
Stereotype Consistent	Smart	1.16	Stereotype Consistent	Confident	3.38
Stereotype Inconsistent	Nervous	-1.27	Stereotype Inconsistent	Shallow	-0.38
Stereotype Inconsistent	Rude	-1.27	Stereotype Inconsistent	Athletic	-0.44
Stereotype Inconsistent	Lazy	-1.50	Stereotype Inconsistent	Rude	-0.44
Stereotype Inconsistent	Moronic	-1.50	Stereotype Inconsistent	Aggressive	-0.46
Stereotype Inconsistent	Narcissistic	-1.66	Stereotype Inconsistent	Obnoxious	-0.46
Stereotype Inconsistent	Introverted	-1.74	Stereotype Inconsistent	Indecisive	-0.49
Stereotype Inconsistent	Annoying	-2.13	Stereotype Inconsistent	Annoying	-0.71
Stereotype Inconsistent	Dumb	-2.36	Stereotype Inconsistent	Moronic	-0.90
Stereotype Inconsistent	Shy	-2.36	Stereotype Inconsistent	Lazy	-0.98
Stereotype Inconsistent	Quiet	-2.67	Stereotype Inconsistent	Dumb	-1.17

Table 7: Correlations between Self-Construal Thinking, Response Times, and Accuracy Rates

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1-Physical Descriptors	1							
2-Social Roles	-.038	1						
3-Trait Descriptors	-.103	-.467**	1					
4-Abstract Thinking	-.402**	-.421**	-.457	1				
5-RTs Implied Traits	-.103	-.027	.024	.048	1			
6-RTs Control Non-Traits	-.070	.023	.098	-.082	.602**	1		
7-Accuracy to Implied Traits	-.061	-.003	-.019	.057	-.028	.095	1	
8-Accuracy to Control Non-Traits	-.006	.046	-.019	-.015	-.172	-.329**	-.110	1

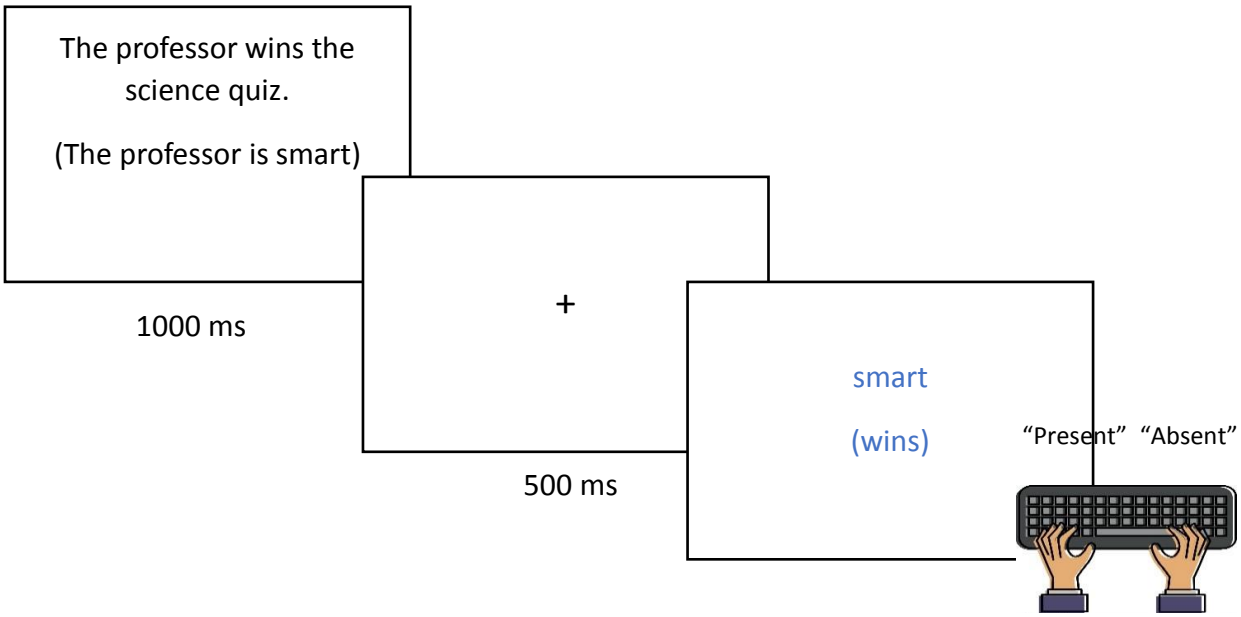

Figure 1: Measuring Spontaneous Trait Inferences using the Recognition Probe Task. Implied and explicit sentences are shown to participants. Here explicit sentences are stated within parentheses. Absent probes are then used to measure STIs. If response times are slower to traits relative to non-traits, then STIs occurred.

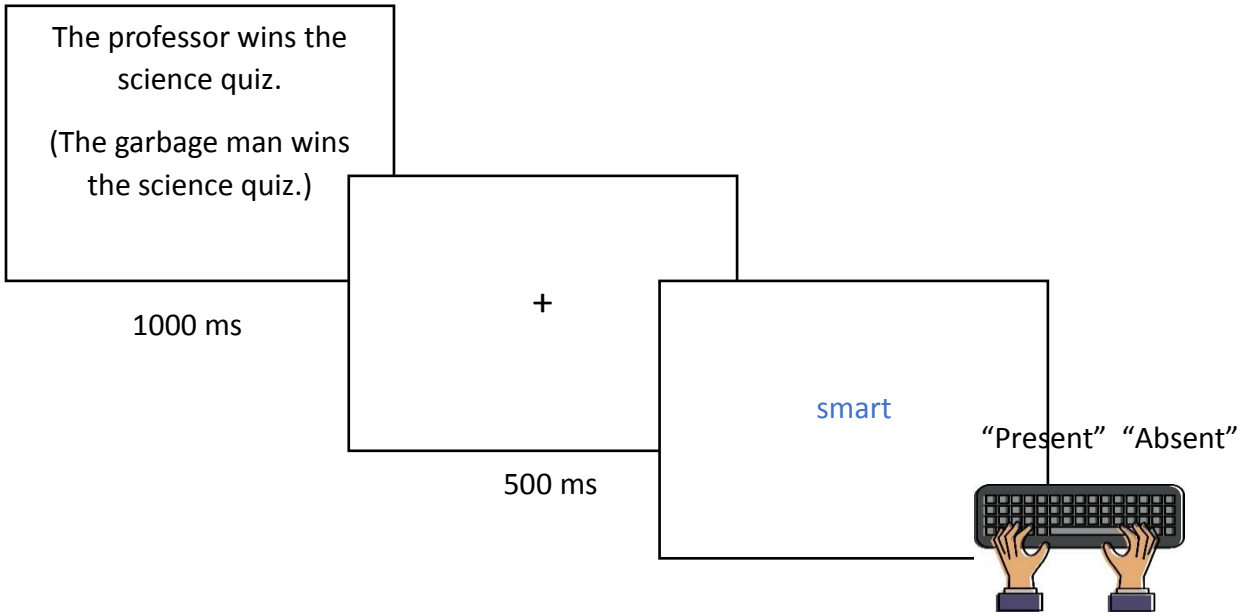

Figure 2: Measuring the influence of stereotypes on STIs using the Recognition Probe Task. To assess whether stereotypes influence STIs, sentences that imply consistent stereotypes are compared to sentences that imply inconsistent stereotypes (shown in parentheses). Response times to the implied trait are then measured. If response times to stereotype consistent sentences are slower than stereotype inconsistent sentences, then stereotypes influence STIs.

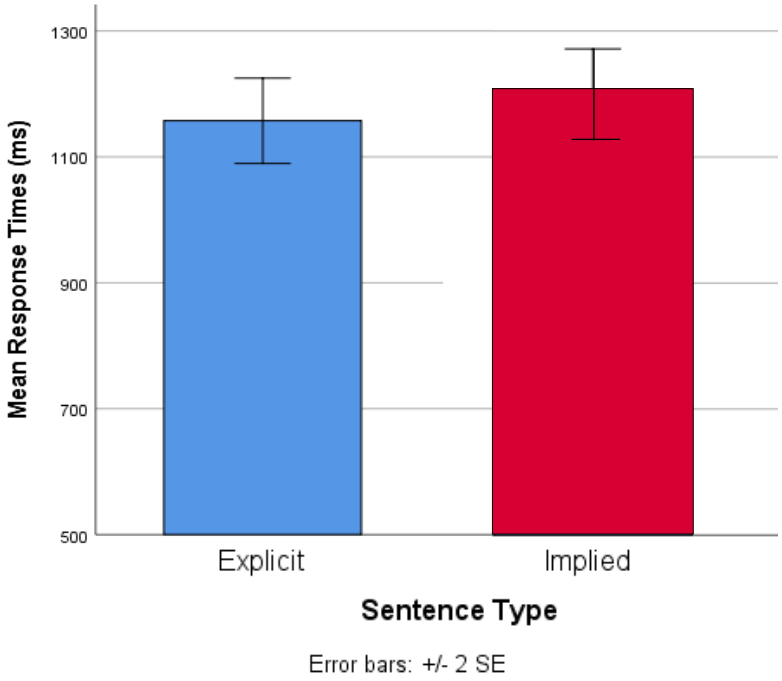

Figure 3: STI Effect for Response Times in Experiment 1. STIs are measured by looking at trials that are followed by absent probes. Participants were significantly slower to implied sentences followed by absent probes, indicating that STIs occurred.

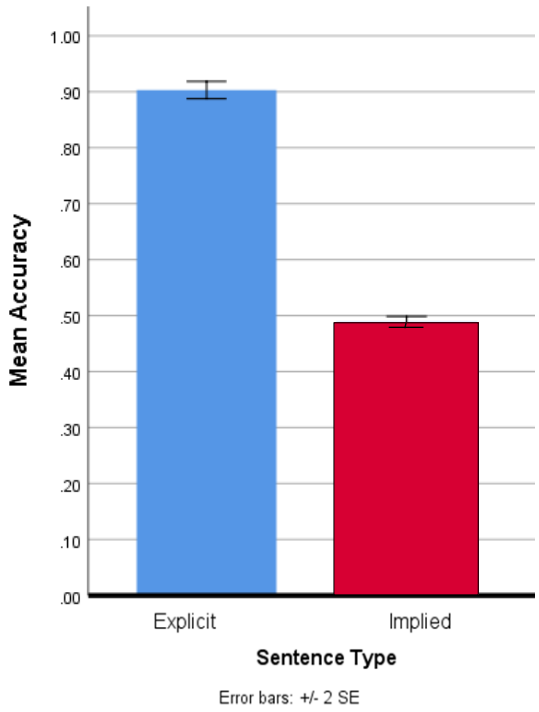

Figure 4: STI effect for accuracy in Experiment 1. STIs are measured by looking at trials that are followed by absent probes. Participants were significantly less accurate to implied sentences followed by absent probes, indicating that STIs occurred.

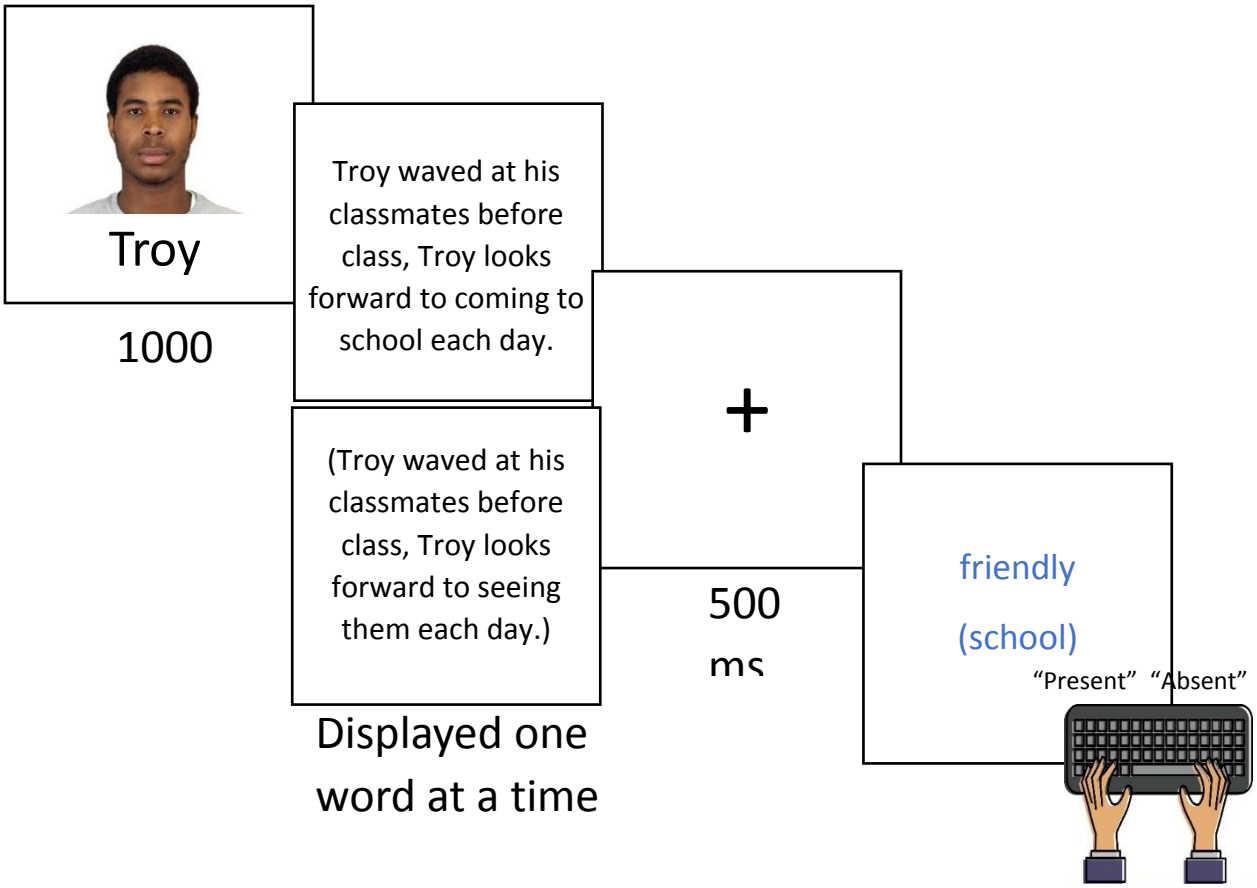

Figure 5: Measuring Spontaneous Trait Inferences using the Modified Recognition Probe Paradigm. Trials that imply traits and are followed by trait probes are compared to trials that imply traits and are followed by non-trait probes (shown in parentheses above). If response times are slower to non-trait probes, then STIs occurred.

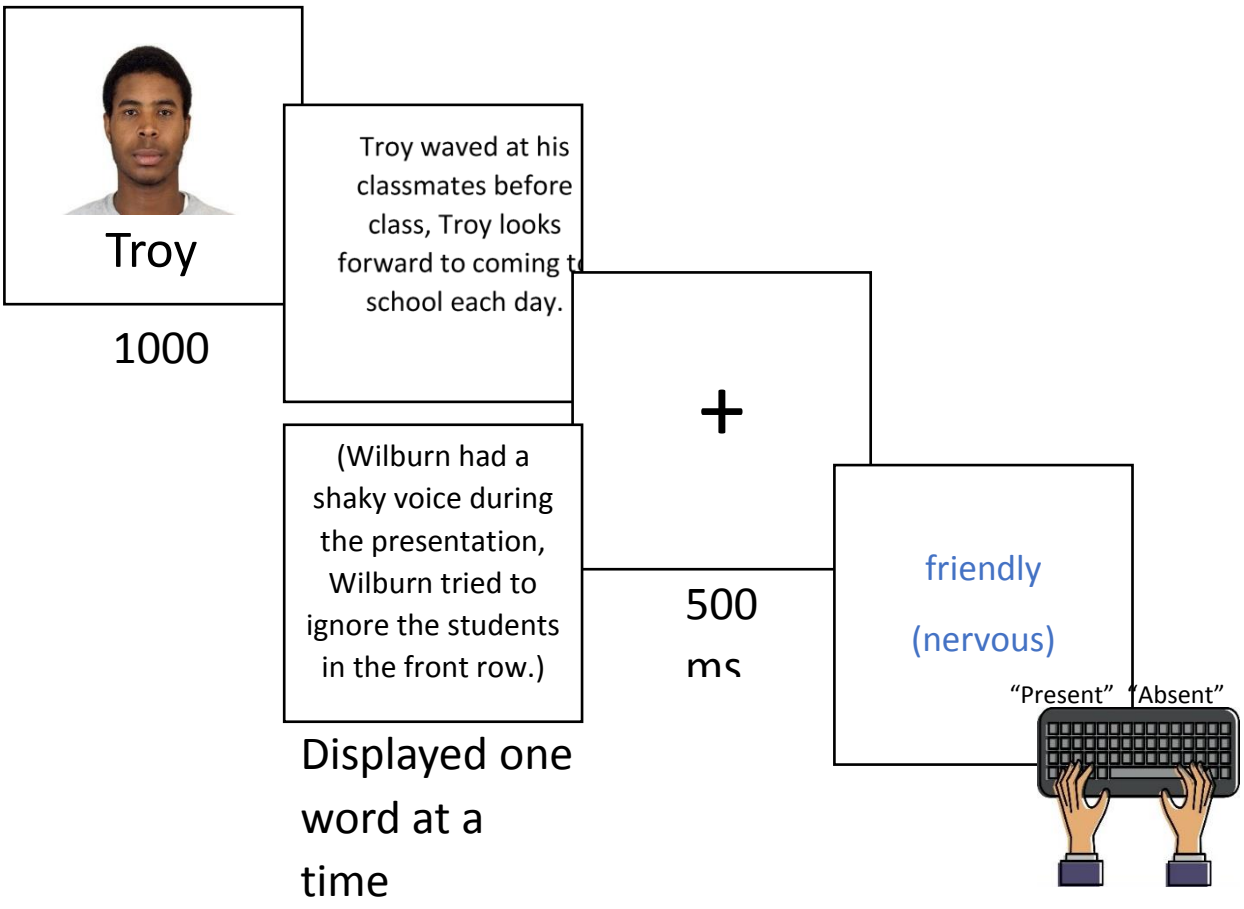

Figure 6: Measuring the influence of stereotypes using the modified recognition probe task. Sentences that imply stereotype consistent traits are compared to sentences that imply stereotype inconsistent traits (shown in parentheses). Stereotypes influence STIs if response times to consistent trials are slower relative to inconsistent trials.

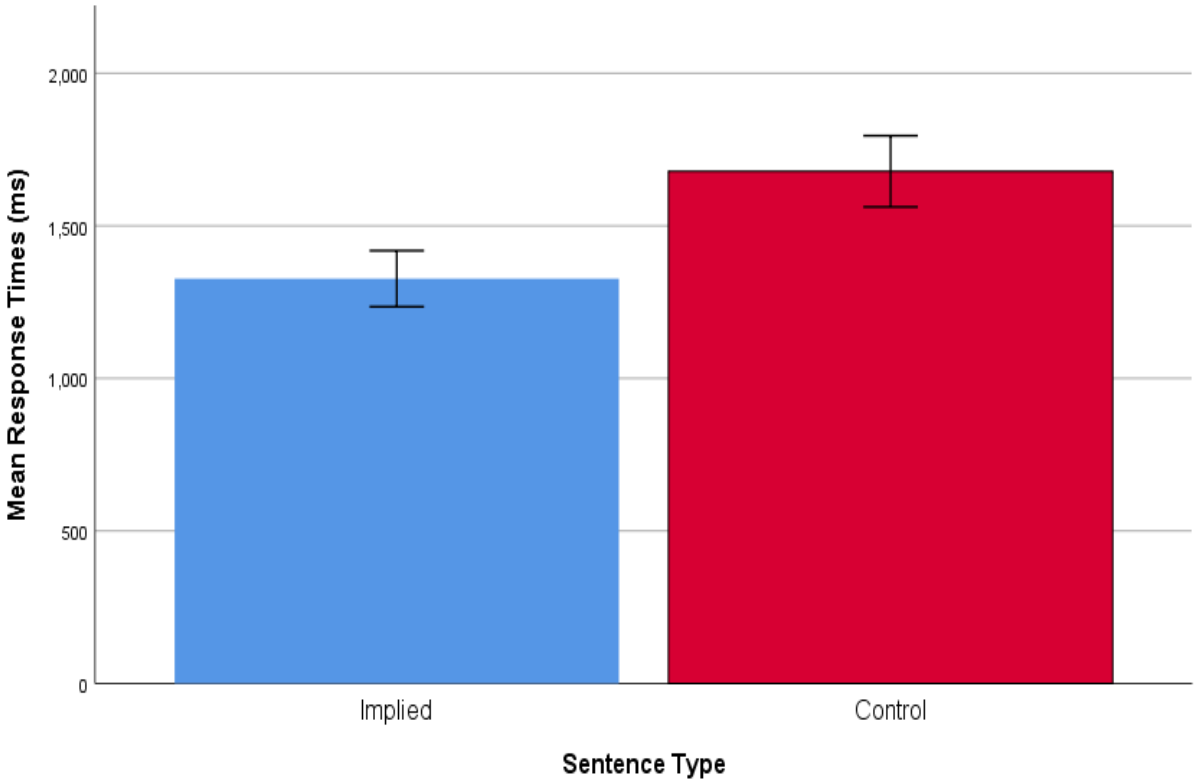

Figure 7: STI effect for response times in Experiment 2. Only absent trials are displayed because absent probes are used to assess STIs. The blue bar represents responses to absent probes that are traits and the red bar represents responses to absent probes that are non-traits. STIs are said to occur when response times to implied sentences that are followed by absent trait probes are slower compared to control sentences followed by absent probes that are not traits. This study found that participants were slower to control trials relative to implied trials indicating a reverse effect for STIs.

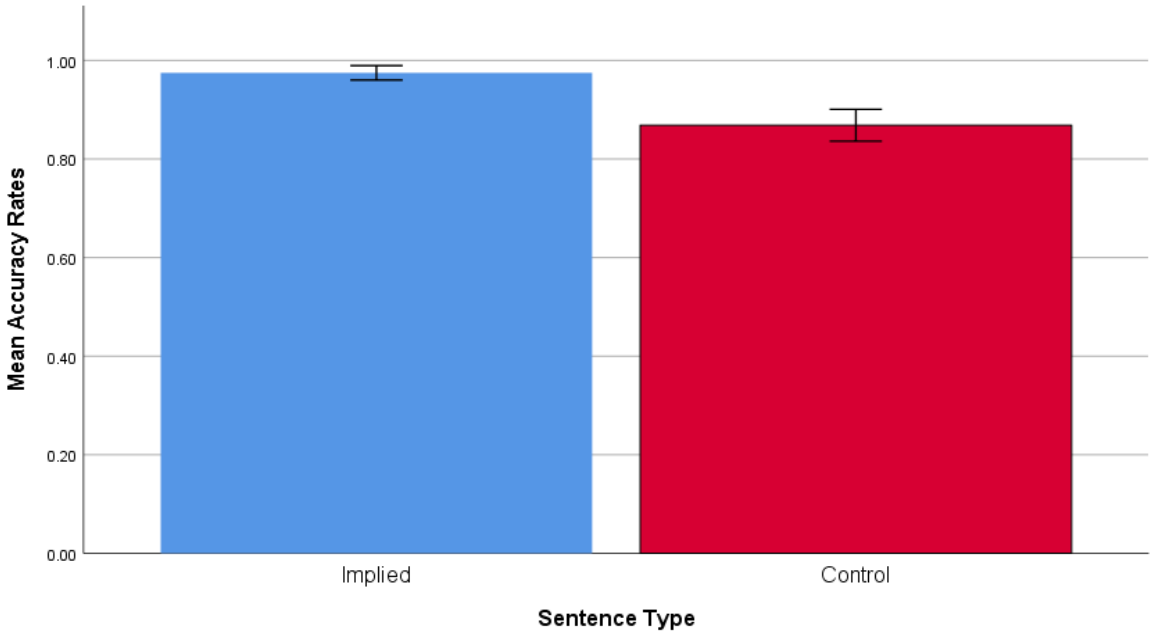

Figure 8: STI effect for accuracy in Experiment 2. Only responses to absent probe words are shown. The blue column represents absent probes that are trait words while the red bar represents absent probes that are non-trait words. Participants were significantly less accurate to categorize control absent probes compared to implied trait probes.

Appendix A

Supplementary Materials for Accuracy and Response Time ANOVAs

The ANOVA for accuracy yielded a significant main effect for Sentence Type ($F(1,114) = 2120.03$, $p < .001$), a significant main effect for Stereotype ($F(1,114) = 2142.115$, $p < .0001$), and a significant main effect for probe ($F(1,114) = 1110.966$, $p < .001$). Participants were less accurate for implied sentences ($M = 70\%$, $SD = 5\%$), absent probes ($M = 70\%$, $SD = 5\%$), and consistent stereotypes ($M = 71\%$, $SD = 4\%$). There were also significant interactions for Sentence Type and Stereotype ($F(1,114) = 1684.902$, $p < .001$) and Stereotype and Probe ($F(1,114) = 1808.034$, $p < .001$). Participants were less accurate in trials that had implied sentences and consistent stereotypes and less accurate in trials that were stereotype consistent and followed by absent probes.

The ANOVA for RTs (See Table 6) revealed a significant main effect for Sentence Type ($F(1,114)=70.537$, $p < .001$) and Probe ($F(1,114) = 82.032$, $p <.001$). Participants responded slower to implied sentences ($M = 1146$, $SD =329$) and absent probes ($M = 1179$, $SD = 360$). All other main effects and interactions were non-significant.

Appendix B

List of Names used in Experiment 2

Black Male Names

- Reggie
- Cameron
- Chester
- Troy
- Dominic
- Cory
- Thomas
- Dixon
- Randall
- Emmet
- Terris
- Omar
- Clayton
- Hosea
- Devon
- Douglas
- Clyde
- Edgar
- Bravon
- Kendrik
- Nolan
- Lemar
- Corbin
- Lavon
- Zachary
- Jackson
- Kumar
- Marcus
- Marvin
- Nelson
- Jalen
- Isiah
- Henry
- DeAndre
- Gary
- Leroy
- Wade
- James
- Jerome
- Darrell
- Revon
- Sheik
- Stanley
- Colton
- DeMarco
- Evander
- Finn
- Freddie
- Herold
- Jeffery
- Wilburn
- Xavier
- Umar
- Andre
- Vance
- Brent
- Noah
- Quinten
- Arnold
- Brenden
- John
- Allen
- Brady
- Trey
- Tyson
- Wilson
- Kenny
- Larry
- Michael

Asian Male Names

- Longwei
- Aiguo
- Ichiro
- Qjang
- Sakura
- Fujita
- Riku
- Katsuro
- Hachiro
- Daisuke
- Junjie
- Li Qiang
- Makoto
- Noboru
- Keiji
- Haru
- Budi
- Kenichi
- Guangli
- Akio
- Donghai
- Hwan
- Liwei
- Zhang
- Min
- Haru
- Budi
- Kenichi
- Guangli
- Akio
- Donghai
- Hwan
- Liwei
- Zhang
- Min
- Takeshi
- Norio
- Kaede
- Kiyoshi
- Sanhay
- Fujita
- Riku
- Katsuro
- Hachiro
- Daisuke
- Junjie
- Li Qiang
- Makoto
- Noboru
- Keiji
- Xiu
- Akeno
- Feng
- Thang
- Zhen
- Kiri
- Isamu
- Niran
- Aki
- Chung
- Amida
- Ang
- Chan
- Ming
- Dae
- Dalip
- Haider
- Kasem
- Kang

Appendix C

Experimental Sentences used in Experiment 2

Implied Sentences

Stereotype	Sentence	Probe Shown	Probe	Probe Type
Consistent	Reggie plays sports in his spare time, Reggie is on the baseball team and lives next door to me.	athletic	Absent	Trait
Consistent	Cameron does stand up comedy, Cameron works down the street and is scheduled for today.	funny	Absent	Trait
Consistent	Chester has two jobs to pay for tuition, Chester knows the value of a well-balanced budget.	hard-working	Absent	Trait
Consistent	Troy waved at his classmates before class, Troy looks forward to coming to school each day.	friendly	Absent	Trait

Consistent	Dominic has conversations with others easily, Dominic wants to pursue politics after graduation.	talkative	Absent	Trait
Consistent	Leroy felt good after the job interview, Leroy shook the interviewer's hand and thought about his future prospects.	confident	Absent	Trait
Consistent	Wade gave directions to the lost freshman, Wade is president of the student government association.	helpful	Absent	Trait
Consistent	James volunteered to take charge for the project, James designed the project and assigned parts to the group members.	leader	Absent	Trait
Consistent	Jerome diced the veggies and recreated the five star dish, Jerome thought of buying new kitchen utensils.	skillful	Absent	Trait
Consistent	Darrell received a 90 on his exam without studying, Darrell celebrated his success with a beer.	smart	Absent	Trait
Consistent	Reggie plays sports in his spare time, Reggie is on the baseball team and lives next door to me.	basketball	Absent	Non-Trait

Consistent	Cameron does stand up comedy, Cameron works down the street and is scheduled for today.	performs	Absent	Non-Trait
Consistent	Chester has two jobs to pay for tuition, Chester knows the value of a well-balanced budget.	level-headed	Absent	Non-Trait
Consistent	Troy waved at his classmates before class, Troy looks forward to seeing them each day.	school	Absent	Non-Trait
Consistent	Dominic has conversations with others easily, Domonic wants to pursue counseling after graduation.	politics	Absent	Non-Trait
Consistent	Leroy felt good after the job interview, Leroy shook the interviewer's hand and thought about his prospects.	future	Absent	Non-Trait
Consistent	Wade gave directions to the lost freshman, Wade is in the student government association.	president	Absent	Non-Trait
Consistent	James volunteered to take charge for the project, James liked the project and assigned parts to the group members.	designed	Absent	Non-Trait

Consistent	Jerome diced the veggies and recreated the five star dish, Jerome thought of buying new utensils.	kitchen	Absent	Non-Trait
Consistent	Darrell received a 90 on his exam without studying, Darrell decided to go enjoy a beer.	celebrated	Absent	Non-Trait
Irrelevant	Wilburn had a shaky voice during the presentation, Wilburn tried to ignore the students in the front row.	nervous	Absent	Trait
Irrelevant	Xavier said no to a date with a great girl because she was ugly, Xavier walked away and thought of his ideal girlfriend.	rude	Absent	Trait
Irrelevant	Umar stayed in bed watching movies instead of doing homework, Umar tried to forget about his list of things to do.	lazy	Absent	Trait
Irrelevant	Andre put the wrong key in the car ignition twice, Andre buckled his seatbelt as he backed out of the parking spot.	moronic	Absent	Trait
Irrelevant	Vance bragged about how he's the best person alive, Vance checked himself out in the bathroom mirror then winked.	narcissistic	Absent	Trait

Irrelevant	Brent stayed in during the weekend instead of going out, Brent decided to start reading the fantasy novel he bought online.	introverted	Absent	Trait
Irrelevant	Noah asked the same question over and over again, Noah smirked and I try not to talk to him whenever possible.	annoying	Absent	Trait
Irrelevant	Quinten wore his shoes on the wrong foot all day, Quinten tweeted about his experience then shared a picture.	dumb	Absent	Trait
Irrelevant	Arnold had trouble talking to new people, Arnold preferred to look at his phone to research the next movie showtime.	shy	Absent	Trait
Irrelevant	Brenden didn't talk during the class discussion, Brenden walked to the library after class and found an empty seat.	quiet	Absent	Trait
Irrelevant	Wilburn had a shaky voice during the presentation, Wilbrun tried to focus on the students in the front row.	ignore	Absent	Non-Trait

Irrelevant	Xavier said no to a date with a great girl because she was not gorgeous, Xavier walked/turned away and imagined his ideal girlfriend.	ugly	Absent	Non-Trait
Irrelevant	Umar stayed in bed watching movies instead of doing homework, Umar tried to forget about the things he had to do.	chores	Absent	Non-Trait
Irrelevant	Andre put the wrong key in the car ignition twice, Andre buckled up as he backed out of the parking spot.	seatbelt	Absent	Non-Trait
Irrelevant	Vance bragged about how he's the best person alive, Vance checked himself out in the reflection then winked.	mirror	Absent	Non-Trait
Irrelevant	Brent stayed in during the weekend instead of going out, Brent decided to start reading the fantasy novel he bought online.	book	Absent	Non-Trait
Irrelevant	Noah asked the same question over and over again, Noah smirked and I try not to talk to him whenever possible.	avoid	Absent	Non-Trait

Irrelevant	Quinten wore his shoes on the wrong foot all day, Quinten tweeted about his morning then shared a picture.	experience	Absent	Non-Trait
Irrelevant	Arnold had trouble talking to new people, Arnold preferred to look at his phone to research the next showtime.	movie	Absent	Non-Trait
Irrelevant	Brenden didn't talk during the class discussion, Brenden walked to the bus stop after class and found an empty seat.	library	Absent	Non-Trait
Consistent	Takeshi received a 90 on his exam without studying, Takeshi celebrated his success with a beer.	smart	Absent	Trait
Consistent	Norio has two jobs to pay for tuition, Norio knows the value of a well-balanced budget.	hard-working	Absent	Trait

Consistent	Kaede refused to eat the cupcake because he was on a diet, Kaede loves sweets and lives by the local bakery.	disciplined	Absent	Trait
Consistent	Kiyoshi diced the veggies and recreated the five star dish, Kiyoshi thought of buying new kitchen utensils.	skillful	Absent	Trait
Consistent	Sanhay moved into the dorms, Sanhay unpacked his boxes and talked with his new roommate.	independent	Absent	Trait
Consistent	Longwei set a goal to make a million dollars, Longwei follows the stock market and he invests in large franchises.	ambitious	Absent	Trait
Consistent	Aiguo attends class everyday even if he wants to ditch, Aiugo makes sure to sit in the front and takes detailed notes.	responsible	Absent	Trait
Consistent	Ichiro stays at the library for hours to prepare for class, Ichiro sat in his usual spot and got to work.	studious	Absent	Trait
Consistent	Qjang arrived to the meeting ten minutes before it started, Qjang prepared his cup of coffee before the meeting and waited for everyone to arrive.	punctual	Absent	Trait

Consistent	Sakda felt good after the job interview, Sakda shook the interviewer's hand and thought about his future prospects.	confident	Absent	Trait
Consistent	Takeshi received a 90on his exam without studying, Takeshi decided to go enjoy a beer.	celebrated	Absent	Non-Trait
Consistent	Norio has two jobs to pay for tuition, Norio knows the value of and well-balanced budget.	level-headed	Absent	Non-Trait
Consistent	Kaede refused to eat the cupcake because he was on a diet, Kaede loves sweets and lives by the bakery.	local	Absent	Non-Trait
Consistent	Kiyoshi diced the veggies and recreated the five star dish, Kiyoshi thought of buying new utensils.	kitchen	Absent	Non-Trait
Consistent	Sanhay moved into the dorms, Sanhay removed his boxes and talked with his new roommate.	unpacked	Absent	Non-Trait
Consistent	Longwei set a goal to make a million dollars, Longwei follows the market and invests in large franchises.	stock	Absent	Non-Trait

Consistent	Aiguo attends class everyday even if he wants to ditch, Aiguo makes sure to sit in the front and takes notes.	detailed	Absent	Non-Trait
Consistent	Ichiro stays at the library for hours to prepare for class, Ichiro sat in his spot and got to work.	usual	Absent	Non-Trait
Consistent	Qjang arrived to the meeting ten minutes before it started, Qjang drank his cup of coffee before the meeting and waited for everyone to arrive.	prepared	Absent	Non-Trait
Consistent	Sakda felt good after the job interview, Sakda, shook the interviewer's hand and thought about his prospects.	future	Absent	Non-Trait
Irrelevant	Kiri refused to date someone who wasn't his type, Kiri downloaded an online dating app and swiped left on all his matches.	shallow	Absent	Trait
Irrelevant	Isamu plays sports in his spare time, Isamu is on the baseball team and lives next door to me.	athletic	Absent	Trait
Irrelevant	Niran said no to a date with a great girl because she was ugly, Niran walked away and thought of his ideal girlfriend.	rude	Absent	Trait

Irrelevant	Aki slapped the waitress, Aki refused the cold, food and demanded to speak with the chef.	aggressive	Absent	Trait
Irrelevant	Chung poked his sister over and over again, Chung followed her around and was scolded by his mom.	obnoxious	Absent	Trait
Irrelevant	Xiu couldn't pick between a burger or chicken for lunch, Xiu asked how the dishes wererated and thought about which one to buy.	indecisive	Absent	Trait
Irrelevant	Akeno asked the same question over and over again, Akeno smirked and I try not to talk to him whenever possible.	annoying	Absent	Trait
Irrelevant	Feng put the wrong key in thecar ignition twice, Feng buckled his seatbelt as he backed out of the parking spot.	moronic	Absent	Trait
Irrelevant	Thang stayed in bed watching movies instead of doing homework Thang tried to forget about his list of things to do.	lazy	Absent	Trait
Irrelevant	Zhen wore his shoes on the wrong foot all day, Zhen tweeted about his experience then shared a picture.	dumb	Absent	Trait

Irrelevant	Kiri refused to date someone who wasn't his type, Kiri downloaded a dating app and continued on with his day.	online	Absent	Non-Trait
Irrelevant	Isamu plays sports in his spare time, Isamu is on the baseball team and lives next door to me.	basketball	Absent	Non-Trait
Irrelevant	Niran said no to a date with a great girl because she was not gorgeous, Niran walked away and imagined his ideal girlfriend.	thought		Non-Trait
Irrelevant	Aki slapped the waitress, Aki refused the food and asked to speak with the chef.	cold		Non-Trait
Irrelevant	Chung poked his sister over and over again, Chung followed her and was scolded by his mom.	around		Non-Trait

Irrelevant	Xiu couldn't pick betweena burger or chicken for lunch, Xiu asked how the dishes were and debated which to buy.	rated		Non-Trait
Irrelevant	Akeno asked the same question over and over again, Akeno smirked and I try not to talk to him whenever possible.	proceeded		Non-Trait
Irrelevant	Feng put the wrong key in the car ignition twice, Feng buckled up as he backed out of the parking spot.	parked		Non-Trait
Irrelevant	Thang stayed in bed watching movies instead of doing homework Thang tried to forget about the things he had to do.	responsibilities		Non-Trait
Irrelevant	Zhen wore his shoes on the wrong foot all day, Zhen tweeted about his morning then shared a picture.	experience		Non-Trait

Explicit Sentences

Stereotype	Sentence	Probe Shown	Probe	Probe Type
Consistent	Reggie plays sports in his spare time, Reggie is athletic and lives next door to me.	athletic	Present	Trait
Consistent	Cameron does stand up comedy, Cameron is funny and is scheduled for today.	funny	Present	Trait
Consistent	Chester has two jobs to pay for tuition, Chester is hard-working and knows the value of a well-balanced budget.	hard-working	Present	Trait
Consistent	Troy waved at his classmates before class, Troy is friendly and looks forward to coming to school each day.	friendly	Present	Trait
Consistent	Dominic has conversations with others easily, Dominic is talkative and wants to pursue politics.	talkative	Present	Trait

Consistent	Leroy felt good after the job interview, Leroy is confident and thought about his future prospects.	confident	Present	Trait
Consistent	Wade gave directions to the lost freshman, Wade is helpful and is president of the student government association.	helpful	Present	Trait
Consistent	James volunteered to take charge for the project, James is a leader and he assigned parts to the group members.	leader	Present	Trait
Consistent	Jerome diced the veggies and recreated the five star dish, Jerome is skillful and thought of buying new kitchen utensils.	skillful	Present	Trait
Consistent	Darrell received a 90 on his exam without studying, Darrell is smart and celebrated with a beer.	smart	Present	Trait
Consistent	Wilburn had a shaky voice during the presentation, Wilbrun was nervous and he tried to ignore the students in the front row.	nervous	Present	Non-Trait
Consistent	Xavier said no to a date with a great girl because she was ugly, Xavier is rude and he walked away and thought of his ideal girlfriend.	rude	Present	Non-Trait

Consistent	Umar stayed in bed watching movies instead of doing homework, Umar is lazy and tried to forget about his list of things to do.	lazy	Present	Non-Trait
Consistent	Andre put the wrong key in the car ignition twice, Andre is moronic and buckled his seatbelt as he backed out of the parking spot.	moronic	Present	Non-Trait
Consistent	Vance bragged about how he's the best person alive, Vance is narcissistic and checked himself out in the bathroom mirror then winked.	narcissistic	Present	Non-Trait
Consistent	Brent stayed in during the weekend instead of going out, Brent is introverted and decided to start reading the fantasy novel he bought online.	introverted	Present	Non-Trait
Consistent	Noah asked the same question over and over again, Noah is annoying and I try to not talk to him whenever possible.	annoying	Present	Non-Trait
Consistent	Quinten wore his shoes on the wrong foot all day, Quinten is dumb and tweeted about his experience then shared a picture.	dumb	Present	Non-Trait
Consistent	Arnold had trouble talking to new people, Arnold is shy and preferred to look at his phone.	shy	Present	Non-Trait

Consistent	Brenden didn't talk during the class discussion, Brenden is quiet and walked to the library after class.	quiet	Present	Non-Trait
Irrelevant	Reggie plays sports in his spare time, Reggie is on the baseball team and lives next door to me.	baseball/team	Present	Trait
Irrelevant	Cameron does stand up comedy, Cameron performs down the street and is scheduled for today.	performs	Present	Trait
Irrelevant	Chester has two jobs to pay for tuition, Chester knows the value of a well-balanced budget.	well-balanced	Present	Trait
Irrelevant	Troy waved at his classmates before class, Troy looks forward to coming to school each day.	school	Present	Trait
Irrelevant	Dominic has conversations with others easily, Dominic wants to pursue politics after graduation	politics	Present	Trait
Irrelevant	Leroy felt good after the job interview, Leroy shook the interviewer's hand and thought about his future prospects.	future	Present	Trait

Irrelevant	Wade gave directions to the lost freshman, Wade is president of the student government association.	president	Present	Trait
Irrelevant	James volunteered to take charge for the project, James designed the project and assigned parts to the group members.	designed	Present	Trait
Irrelevant	Jerome diced the veggies and recreated the five star dish, Jerome thought of buying new kitchen utensils..	kitchen	Present	Trait
Irrelevant	Darrell received a 90 on his exam without studying, Darrell celebrated his success with a beer.	celebrated	Present	Trait
Irrelevant	Wilburn had a shaky voice during the presentation, Wilbrun tried to ignore the students in the front row.	ignore	Present	Non-Trait
Irrelevant	Xavier said no to a date with a great girl because she was ugly, Xavier walked away and thought of his ideal girlfriend.	ugly	Present	Non-Trait

Irrelevant	Umar stayed in bed watching movies instead of doing homework, Umar tried to forget about his list of chores to do.	chores	Present	Non-Trait
Irrelevant	Andre put the wrong key in the car ignition twice, Andre buckled his seatbelt as he backed out of the parking spot.	seatbelt	Present	Non-Trait
Irrelevant	Vance bragged about how he's the best person alive, Vance checked himself out in the mirror then winked.	mirror	Present	Non-Trait
Irrelevant	Brent stayed in during the weekend instead of going out, Brent decided to start reading the fantasy book he bought online.	book	Present	Non-Trait
Irrelevant	Noah asked the same question over and over again, Noah is annoying and I try to avoid him whenever possible.	avoid	Present	Non-Trait

Irrelevant	Quinten wore his shoes on the wrong foot all day, Quinten tweeted about his experience then shared a picture.	experience	Present	Non-Trait
Irrelevant	Arnold had trouble talking to new people, Arnold preferred to look at his phone to research the next movie showtime.	movie	Present	Non-Trait
Irrelevant	Brenden didn't talk during the class discussion, Brenden walked to the bus stop after class and found an empty seat.	library	Present	Non-Trait
Consistent	Takeshi recieved a 90 on his exam without studying, Takeshi is smart and celebrated with a beer.	smart	Present	Trait
Consistent	Norio has two jobs to pay for tuition, Norio is hard-working and knows the value of a well-balanced budget.	hard-working	Present	Trait
Consistent	Kaede refused to eat the cupcake because he was on a diet, Kaede is disciplined and lives by the local bakery.	disciplined	Present	Trait
Consistent	Kiyoshi diced the veggies and recreated the five star dish, Kiyoshi is skillful and thought of buying new kitchen utensils.	skillful	Present	Trait

Consistent	Sanhay moved into the dorms, Sanhay is independent and unpacked his boxes.	independent	Present	Trait
Consistent	Longwei set a goal to make a million dollars, Longwei is ambitious and he invests in large franchises.	ambitious	Present	Trait
Consistent	Aiguo attends class everyday even if he wants top ditch, Aiguo is responsible and takes detailed notes.	responsible	Present	Trait
Consistent	Ichiro stays at the library for hours to prepare for class, Ichiro is studious and sat in his usual spot.	studious	Present	Trait
Consistent	Qjang arrived to the meeting ten minutes before it started, Qjang is punctual and waited for everyone to arrive.	punctual	Present	Trait
Consistent	Sakda felt good after the job interview, Sakda is confident and thought about his future prospects.	confident	Present	Trait
Consistent	Takeshi recieved a 90 on his exam without studying, Takeshi celebrated his success with a beer.	celebrated	Present	Non-Trait

Consistent	Norio has two jobs to pay for tution, Norio knows the value of a well-blanced budget.	well-balanced	Present	Non-Trait
Consistent	Kaede refused to eat the cupcake because he was on a diet, Kaede loves sweets and lives by the local bakery.	local	Present	Non-Trait
Consistent	Kiyoshi diced the veggies and recreated the five star dish, Kiyoshi thought of buying new kitchen utensils.	kitchen	Present	Non-Trait
Consistent	Sanhay moved into the dorms, Sanhay unpacked his boxes and talked with his new roommate.	unpacked	Present	Non-Trait
Consistent	Longwei set a goal to make a million dollars, Longwei follows the stock market and invests in large franchises.	large	Present	Non-Trait
Consistent	Aiguo atteends class everyday even if he wants to ditch, Aiguo makes sure to sit in the front row and takes notes.	detailed	Present	Non-Trait
Consistent	Ichiro stays at the library for hours to prepare for class, Ichiro sat in his usual spot and got to work.	usual	Present	Non-Trait

Consistent	Qjang arrived to the meeting ten minutes before it started, Qjang prepared his cup of coffee before the meeting and waited for everyone to arrive.	prepared	Present	Non-Trait
Consistent	Sakda felt good after the job interview, Sakda shook the interviewer's hand and thought about his future prospects.	future	Present	Non-Trait
Irrelevant	Kiri refused to date someone who wasn't his type, Kiri is shallow and continued on with his day.	shallow	Present	Trait
Irrelevant	Isamu plays sports in his spare time, Isamu is athletic and lives next door to me.	athletic	Present	Trait
Irrelevant	Niran said no to the great girl because she was ugly, Niran is rude and he walked away and thought of his ideal girlfriend.	rude	Present	Trait
Irrelevant	Aki slapped the waitress, Aki is aggressive and asked to speak with the chef.	aggressive	Present	Trait
Irrelevant	Chung poked his sister over and over again, Chung is obnoxious and followed her around.	obnoxious	Present	Trait

Irrelevant	Xiu couldn't pick between a burger or chicken for lunch, Xiu is indecisive and asked how the dishes were rated.	indecisive	Present	Trait
Irrelevant	Akeno asked the same question over and over again, Akeno is annoying and I try not touch talk to him whenever possible.	annoying	Present	Trait
Irrelevant	Feng put the wrong key in the car ignition twice, Feng is moronic and buckled his seatbelt as he backed out of the parking spot.	moronic	Present	Trait
Irrelevant	Thang stayed in bed watching movies instead of doing homework, Thang is lazy and tried to forget about his list of things to do.	lazy	Present	Trait
Irrelevant	Zhen wore his shoes on the wrong foot all day, Zhen is dumb and tweeted about his experience then shared a picture.	dumb	Present	Trait
Irrelevant	Kiri refused to date someone who wasn't his typw, Kiri downloaded an online dating app and continued on with his day.	online	Present	Non-Trait

Irrelevant	Isamu plays sports in his spare time, Isamu is on the baseball team and lives next door to me.	baseball	Present	Non-Trait
Irrelevant	Niran said no to a date with a great girl because she was not gorgeous, Niran walked/turned away and imagined his ideal girlfriend.	ugly	Present	Non-Trait
Irrelevant	Aki slapped the waitress, Aki refused the cold food and asked to speak with the chef.	cold	Present	Non-Trait
Irrelevant	Chung poked his sister over and over again, Chung followed her around and was scolded by his mom.	around	Present	Non-Trait
Irrelevant	Xiu couldn't pick between a burger or chicken for lunch, Xiu asked how the dishes were rated and debated which to buy.	rated	Present	Non-Trait
Irrelevant	Akeno asked the same question over and over again, Akeno smirked and I try not to talk to him whenever possible.	proceeded	Present	Non-Trait

Irrelevant	Feng put the wrong key in the car ignition twice, Feng buckled his seatbelt association. he backed out of the parking spot.	parked	Present	Non-Trait
Irrelevant	Thang stayed in bed watching movies instead of doing homework, Thang tried to forget about his list of chores to do.	responsibilities	Present	Non-Trait
Irrelevant	Zhen wore his shoes on the wrong foot all day, Zhen tweeted about his experience then shared a picture.	experience	Present	Non-Trait

Curriculum Vitae

Jessica R. Bray was born in El Paso, Texas. She graduated from the University of Texas at El Paso on May 2016 with *magna cum laude* honors in a Bachelor's of Science degree majoring in Psychology and minoring in mathematics. Jessica entered The University of Texas at El Paso Psychology doctoral program for Social Cognitive Neuroscience in Fall 2016. Jessica continues her research on stereotypes and cognitive processes within the Social Cognition Lab.