THE IMPACT OF ALCOHOL CONSUMPTION ON THE DISPLAYED AFFECT OF WHITE INDIVIDUALS ENGAGING IN INTERRACIAL INTERACTIONS

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Evidence from empirical studies using static race cues suggests that alcohol consumption may increase expressions of prejudice. However, these data may not reliably predict the behavior of Whites during interracial interactions since both expressions of stigma and the effects of alcohol intoxication have been shown to vary widely from non-social to social paradigms. The current study aimed to capture in real time the dynamic and evolving processes involved in interracial interactions and examined how these processes are modified by alcohol consumption. I used Paul Ekman's Facial Action Coding System (FACS) to conduct a micro-analysis of the emotional experience of Whites engaging in a 36-minute interaction with either two other Whites (racially homogeneous groups), or one White and one Black participants (interracial groups). Alcohol moderated the impact of group racial composition on expressions associated with self-awareness but did not moderate other positive or negative affective displays. Results highlight the role of presentational concerns in modern interracial interactions.

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1.0 INTRODUCTION

Projections estimate that by 2050 White Americans will no longer be the majority in the United States (Feagin & O'Brien, 2004). As interracial interactions become increasingly common, it will become increasingly important to examine these interactions as they occur under a variety of circumstances. Alcohol consumption is a deeply rooted part of most human cultures (MacAndrew & Edgerton, 1969), and thus may be a significant factor in some portion of these interracial interactions. Research on the effect of alcohol on racial attitudes may not only serve to predict behavior, but may also prove informative about the processes that underlie intergroup relations. Years of research has informed our understanding of the pharmacological and psychological effects of alcohol (Bartholow, Dickter, & Sestir, 2006). Thus, our understanding of alcohol's effects could refine our understanding of the psychological processes involved in racial attitudes.

The present study examined the impact of alcohol consumption on the affect and behavior of Whites engaging in interracial interactions. A limited number of laboratory-based studies have examined the impact of alcohol on racial attitudes by exposing participants to race "cues." However, racial attitudes are only one of several factors that determine behavior towards minorities, and no study conducted to date has evaluated the effects of alcohol consumption on behavior during an interracial interactions. Theoretical models of alcohol's effects on cognition offer some insight into how alcohol might influence behavior under a variety of circumstances. I

review the existing literature that examines alcohol's effects on racial attitudes, explaining the limitations of this research in its ability to predict cognition and behavior during an interracial interaction. I also discuss relevant theoretical models of alcohol's psychological and behavioral effects and explain what these theories might predict regarding alcohol's effects on individuals engaging in interracial interactions. Finally, I review the methodology of the present study and explain its potential contributions to the existing literature.

1.1 IMPACT OF ALCOHOL CONSUMPTION ON RACE RELATIONS

Evidence from epidemiological studies indicates that alcohol consumption may increase expressions of prejudice. Research suggests that perpetrators of "hate crimes" are more likely to be intoxicated at the time of the offense than assailants in non-racially motivated assaults (Messner, Mchugh, & Felson, 2004). Empirical studies lend support and theoretical grounding to epidemiological findings. I located four laboratory studies examining the effects of alcohol on racial attitudes, all of which use cue-exposure paradigms.[1] In general, the findings of these studies support epidemiological data suggesting that alcohol increases the expression of prejudice.[2] Reeves and Nagoshi (1993) were among the first to investigate this question empirically, examining the self-reported mood ratings of participants after they viewed a video

[1] For the purposes of this paper I will define a "cue-exposure" paradigm as one in which participants are presented with either a visual or a verbal stimulus and then asked to respond to it. The cue could take the form of an image flashed on a screen, a short video, or a recorded conversation. The response measure could take the form of voluntary self-report, reaction time, or response accuracy data. Thus, these paradigms are distinguished from interactive paradigms, in which participants are asked to interact with another person, or pure self-report paradigms, in which participants are asked to directly report information about themselves and their attitudes

[2] This paper uses the term "prejudice" to refer broadly to negative racial attitudes—encompassing affective and cognitive dimensions of these attitudes (Dovidio, Brigham, Johnson, & Gaertner, 1996).

depicting an Black actor "shoving" a White actor. Participants who consumed alcohol were more likely to report feeling anxiety after viewing the clip than those consuming placebo.[3] Schlauch, Lang, Plant, Christensen, and Donohue (2009) found similar results with White participants who completed a weapon identification task under normal and "speeded" conditions. Under speeded conditions, participants who consumed alcohol made significantly more race-biased errors on the task than participants in placebo and control groups. Bartholow et al. (2006) found that participants who had consumed alcohol made significantly more errors on a version of the Implicit Associations Test (IAT) than did those consuming placebo. Event Related Brain Potentials were recorded as participants completed the IAT, and results indicated that the increase in race biased errors was mediated by alcohol's effects on cognitive inhibition. Finally, Cunningham, Milne, and Crawford (2007) presented participants with a picture of a computer programmer (selected as a non-culturally sensitive target group) and then played them a recorded "interview" with this programmer. Participants administered an acute dose of alcohol (target BAC .16%) later remembered significantly more stereotype-consistent information vs. stereotype-neutral information from the interview, while those in the placebo and moderate alcohol dose conditions recalled similar levels of stereotype-neutral and consistent information.

[3] The authors interpreted the data as suggesting that alcohol impairs our ability to inhibit racially-biased reactions. It should be noted, however, that it is difficult to draw firm conclusions from these findings, since the authors did not present a second group of participants with a videotape of a White actor shoving an Black actor. Thus, it is impossible to disentangle racial prejudice among intoxicated participants from a tendency to interpret ambiguous behaviors in general as being more aggressive.

1.2 LIMITATIONS OF PAST RESEARCH IN PREDICTING BEHAVIOR

Evidence from epidemiological and empirical studies indicates that alcohol increases expression of negative racial attitudes. Though these studies have examined the effects of alcohol consumption on prejudice, none has done so in an interactional framework. In other words, research to date has examined responses of intoxicated individuals to Blacks displayed on a screen, but has not looked at the behavior of an intoxicated White individual while he/she interacts with an Black individual. According to most established definitions, prejudice is a dynamic construct that can evolve and change through the course of a social interaction (Crandall, 1994; Miller, Rothblum, Felicio, & Brand, 1995). Therefore, research investigating negative racial attitudes outside of the context of a social interaction may fail to capture a crucial element of the construct. Meta-analyses have suggested that non-interactional measures of prejudice are only weakly to moderately related to behavior towards Blacks as enacted in an interactional framework (Dovidio, Brigham, Johnson, & Gaertner, 1996). For example, presentational concerns, thought to play a crucial role in determining behavior during interracial interactions, are difficult to study outside of an interactive framework (Lapierre, 1934; Stephan & Stephan, 2000). Nevertheless, a review of the literature (Crocker et al., 1998) suggested that 90% of studies assessing race relations and racial attitudes used a non-interactional experimental paradigm.

It is possible that neither empirical data—suggesting that alcohol increases our reliance on stereotypes—nor epidemiological data—suggesting that alcohol is more likely to be a factor in hate crimes than other forms of violence—will prove valuable in predicting behavior during the majority of modern-day interracial interactions. Both epidemiological and empirical research examine the effect of alcohol on behavior under "targeted" or unusual conditions (Whites

perpetrating a hate crime or Whites looking at an Black face on a screen) but may not present a reliable model of behavior during interactions as they usually occur in everyday life. Furthermore, in our modern era, racial prejudice as enacted through hate crimes represents only one of several threats to Blacks. According to prominent scholars of intergroup relations, the expression of negative racial attitudes may be changing from more conspicuous displays of violence to more subtle, yet equally powerful, expressions of prejudice (i.e., modern prejudice) (Pettigrew, 1988; Sears, 1988). Base rates for hate crimes perpetrated against Blacks have been relatively low in recent years, with approximately 8 in 100,000 Blacks reported as being the victim of a hate crime (Wolf, 2005). Currently there is, perhaps, as much reason to be concerned about this more casual, "ordinary" racial prejudice enacted through subtler means.

One example of the profound effects of this less violent form of racial prejudice can be found in a classic bi-phasic study by Word, Zanna, and Cooper (1974). In the first phase of the study the authors found that White "interviewers" displayed less friendly non-verbal behaviors towards African-American job applicants than to White job applicants. In the second phase, White confederates were trained to model either the behaviors displayed by the naïve White interviewers to Black candidates or the behaviors the interviewers enacted towards White candidates. They then interviewed naïve White job applicants. The White interviewees in the second phase predictably performed worse when exposed to the non-verbal behaviors previously displayed towards the Black interviewees than did those applicants exposed to the friendlier non-verbal behaviors previously enjoyed by White job candidates. Thus, these less conspicuous incidents of racial prejudice could have effects ranging from decreasing morale (when encountered in an unfriendly passerby) to hindering economic advancement (when experienced during a job interview).

As discussed above, racial prejudice may vary widely depending on the context (e.g., interactional vs. non-interactional). Similarly, response to alcohol has been shown to vary widely depending on the environment in which alcohol is consumed. In their classic text *Drunken Comportment*, MacAndrew and Edgerton (1969) suggested that alcohol intoxication can manifest very differently depending not only on the broader cultural context but also the immediate social environment. More specifically, they challenged the widespread belief that intoxicated individuals lose control of their actions and uniformly become aggressive and disinhibited violators of social norms. Instead, they suggested that drunken behaviors are governed by societal norms and environmental constraints, and are as variable as are the contexts and cultures in which they are enacted.

Steele and Josephs (1990) added both empirical support and theoretical grounding to MacAndrew and Edgerton's observation through their theory of *Alcohol Myopia*. Steele and Josephs suggest that alcohol limits attentional capacity, allowing intoxicated individuals to process only the most immediate environmental cues. They explain alcohol's tendency to elicit antisocial behaviors by suggesting that intoxicated individuals lose the capacity to simultaneously focus on both long-term consequences of their actions and immediate environmental triggers. Thus, intoxicated individuals will attend to the most immediate contextual cues (e.g., the annoying man next to me) and lack the cognitive capacity to consider the adverse long-term consequences of starting a bar fight. However, the authors point out that alcohol has not only been associated with antisocial behavior, but also with impressive and unusual displays of altruism. The behavior of the drunk is not universally antisocial, but rather depends on the nature of the most immediate environmental cues. In a test of Steele and Josephs' theory, Macdonald, Fong, Zanna and Martineau (2000) found that intoxicated

individuals reported stronger intentions to use condoms than did sober individuals in the presence of strong inhibitive cues (a hand stamp that read "AIDS Kills"). Thus, the actions of the intoxicated individual can vary widely depending on the nature of the most immediate cues.

In light of this research, we cannot assume that laboratory studies testing racial cue-reactivity among intoxicated White individuals will predict their behavior in an interactional interracial framework. According to Steele and Josephs's (1990) theory, the actions of alcohol intoxicated individuals will be disproportionately influenced by the most immediate contextual stimuli. In the laboratory studies described above (Bartholow et al., 2006; Schlauch et al., 2009; Reeves & Nagoshi, 1993; Cunningham et al., 2006), participants were presented with very little information other than the race of the individual in question (e.g., an Black face on a screen). With little information provided to participants regarding the study cues themselves (other than race) and with few outside demands on attentional capacity, race may become the most immediate stimulus by default. Therefore, according to *Alcohol Myopia* theory, intoxicated individuals will be more swayed by race, as probably the most immediate environmental stimulus, than their sober counterparts due to their inability to hold competing information in mind (e.g., social taboos against prejudice, etc.).

In everyday interactions with Blacks, White individuals are not only presented with much more information about their companion than the aforementioned study participants (style of dress, verbal content, etc.), but they also experience more demands on attention (monitoring their own verbal content, forming opinions of any other individuals in the interactions, etc.). Furthermore, race may lose salience in social exchanges involving several individuals, only some of whom are racial minorities. The vast majority of studies involving interracial interactions examine behavior in dyads (Word, Zanna, & Cooper, 1974; Dovidio, Kawakami, & Gaertner,

2002), perhaps partially in an effort to increase the salience of race and maximize effects. While dyadic interactions represent some portion of those interactions that occur in naturalistic settings, many daily interactions involve more than two individuals. Whites, as the dominant societal group, represent the majority in many of these interactions. In order to broadly understand alcohol's impact on behavior as it commonly manifests in everyday settings, it is necessary to not only engage interactional paradigms, but examine a variety of different group configurations, including those groups in which Whites are in the majority. However, as Steele and Josephs (1990) point out, it is often difficult to pinpoint which stimulus will be identified as most immediate in these complex social engagements. Steele and Joseph's principles are most useful in predicting behavior when one stimulus can conclusively be identified as more immediate than other environmental stimuli. Thus, *Alcohol Myopia* theory alone may be more useful in predicting behavior in the race cue-exposure paradigms discussed above than in an interactional framework.

1.3 SELF-CONSCIOUSNESS AND PRESENTATIONAL CONCERNS

Thus far, I have discussed the behavior of Whites in interracial interactions as a potential product of racial prejudice (albeit a subtle or "modern" form). However, other factors potentially influencing the behavior of Whites in interracial contexts include self-awareness and presentational concerns, which are less likely to have a significant impact on the behavior of participants responding to Black faces displayed on a screen. Research suggests that Whites often experience stress, discomfort, and heightened self-awareness during interracial interactions (Crocker, Major, & Steele, 1998; Stephan & Stephan, 2000). Such concerns may arise

independent of or in conjunction with racial prejudice: a high-prejudiced individual may experience concern about allowing her racial prejudice to show, or alternatively a low-prejudiced individual may be worried that others should falsely perceive her to be prejudiced (Vorauer & Turpie, 2004). This discomfort and heightened self-awareness are experienced as aversive and may discourage interactions, thereby reducing opportunities to challenge racial attitudes (Plant & Devine, 2003).

One factor potentially contributing to the self-awareness experienced by Whites during interracial interactions is concern about appearing racist (Crandall & Eshleman, 2003). A substantial literature has emerged suggesting that White individuals experience considerable concern about appearing racist and therefore carefully monitor their thoughts, feelings, and behaviors in interracial interactions (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002; Monteith, 1993). In her landmark study, Devine (1989) demonstrated that responding to race cues involves both "automatic" stereotype activation and controlled modification of automatic beliefs. Research has since suggested that White individuals expend considerable cognitive energy monitoring and modifying their stereotype-consistent thoughts and behaviors: White individuals demonstrate high levels of cognitive depletion, measured using the Stroop task, following interracial interactions and high levels of activity in the pre-frontal cortex when viewing pictures of Blacks (Richeson et al., 2003). In short, Whites not only may feel anxious about appearing racist, but may also expend substantial cognitive resources in an attempt to monitor their behavior and avoid appearing racist. These two factors—concern about appearing racist combined with high levels of self-monitoring—may partially account for the discomfort and self-awareness experienced by Whites in interracial interactions.

Research indicates that alcohol may reduce presentational concerns and feelings of self awareness. In his *Self-Awareness* Model, Hull (1981; 1987) argues that alcohol decreases self-

awareness by focusing attention away from the self and towards elements of the external environment. Thus, alcohol consumption may improve coping in some stressful situations by focusing attention outwards (Crocker & Garcia, 2009; Taylor, Klein, Lewis, & Gruenewald, 2000). Furthermore, Hull (1987) hypothesizes that alcohol's tendency to reduce self-awareness will reduce the frequency of negative self-evaluation. According to Hull's theory, alcohol consumption may decrease negative affect during interracial interactions by decreasing negative self evaluations. Decreased levels of stress combined with fewer negative self evaluations suggest that alcohol may reduce negative affect among individuals in stressful social situations. Therefore, since Whites engaging in interracial interactions are likely to experience higher baseline levels of negative affect (Stephan & Stephan, 2000), alcohol consumption may decrease negative affect more markedly among Whites in mixed groups compared to those in racially homogenous groups.

1.4 SUMMARY OF INTERRACIAL INTERACTIONS AND ALCOHOL CONSUMPTION

Epidemiological and laboratory data suggest that alcohol may increase expressions of prejudice and incidence of stereotyping. These studies predict that Whites consuming alcohol in interracial interactions might display more negative behaviors and express more negative affect than sober Whites. However, these data may not reliably predict behavior in many interracial interactions since 1) prejudice is a dynamic phenomenon that may be difficult to capture during static experimental presentations, and 2) the effects of alcohol intoxication, likewise, tend to vary according to the situation and past work has attempted to capture social phenomenon in non-

interactive frameworks. In the present day, feelings of discomfort or self-awareness may play an equal or greater role in predicting the behavior of Whites in interracial interactions than do levels of prejudice in these individuals. Hull's (1987) Self-Awareness Model would seem to predict that alcohol will decrease expression of negative affect and behaviors in interracial interactions by reducing feelings of self-awareness and presentational concerns, decreasing the frequency of negative self evaluations, and fostering a sense of connectedness with other group members.

1.5 ALCOHOL EXPECTANCY EFFECTS ON EXPRESSIONS OF RACIAL ATTITUDES

As noted above, published research has found a significant effect of alcohol consumption on negative racial attitudes. However, there is evidence that alcohol expectancy may have a greater impact on socially deviant behaviors (such as expressions of prejudice) than do the pharmacological effects of alcohol alone. Alcohol expectancy effects consist of the behavioral and psychological consequences of the mere belief that one has consumed alcohol, independent of the pharmacological effects of alcohol on the body (Marlatt & Rohsenow, 1980). In their influential meta-analysis, Hull and Bond (1986) conclude that alcohol expectancy may have a greater impact on social behaviors, while the pharmacological effects of alcohol are typically limited to nonsocial behaviors. Two studies have examined the impact of alcohol expectancy on expressions of racial attitudes and have produced only mixed support for Hull and Bond's (1986) prediction. Reeves and Nagoshi (1993) found a significant main effect of alcohol expectancy on

their measure of racial prejudice while Schlauch et al. (2009) found that the responses of only a portion of their subject pool were influenced by alcohol expectancy.

To complicate the picture further, findings published by Testa et al. (2006) indicate that individuals who believe that they have consumed alcohol sometimes display hypervigilance. This research indicates that such individuals may increase their efforts at self-monitoring compared to individuals who know they are sober in order to counteract the effect of (perceived) alcohol consumption. Such findings could lead one to predict that Whites who believe that they have consumed alcohol will display fewer negative emotions and behaviors towards Blacks than those who know they are sober. Therefore, with Hull and Bond (1986) predicting that alcohol expectancies will be associated with displays of negative racial attitudes, Testa et al. (2006) predicting the opposite, and Schlauch et al. (2009) finding no significant differences, I did not make any predictions about the effect of alcohol expectancies on the behavior of Whites in interracial interactions.

1.6 MEASURING AFFECTIVE RESPONDING IN INTERRACIAL INTERACTIONS

This study is the first to examine behavior and affect during interracial interactions using the Facial Action Coding System (FACS) as a measure of non-verbal expression. Developed by Paul Ekman in the 1970s, FACS allows for the measurement of individual muscle movements as they appear in the face. Each facial muscle action, termed an Action Unit (AU), is assigned a number and coded. FACS has proven to be a highly reliable and sophisticated measure of non-verbal expression (Ekman, Friesen, & Ancoli, 1980). FACS offers advantages over other

measures of non-verbal behavior in that it provides two distinct sources of information: affective and behavioral.

FACS is believed to allow scientists to make inferences about the affect of study participants and offers distinct advantages over other commonly used measures of affect such as self-report or physiological measures. FACS allows for the contemporaneous measurement of emotion without necessitating interruption of the interaction in progress. Physiological measures of affect, such as heart rate and galvanic skin response, are lacking in emotional specificity (e.g., increased heart rate could signal anger or fear). Within FACS, specific AUs have been reliably associated with distinct positive and negative affective states (Ekman et al. 1980). Thus, FACS is thought to allow for both temporal and emotional specificity.

FACS not only served as a measure of the emotions experienced by the Whites in the present study, but also a measure of their *behavior* as it is observable to the Blacks in the study. As Word et al. (1974) demonstrated, our non-verbal behaviors can elicit powerful behavioral effects on our interlocutors. Research suggests that minority group members pay closer attention to, and are therefore more affected by, non-verbal behaviors as compared to verbal content (Dovidio et al., 2002). Thus, FACS serves as a powerful and observable measure of behavior.

Finally, FACS distinguishes between "display" or voluntary and "felt" or involuntary facial expressions and also allows for the identification of facial expressions associated with the "self-conscious emotions" (Keltner. 1995). As discussed earlier, Devine (1988) determined that prejudice consists of both automatic negative stereotypes and conscious modification of these stereotypes. In other words, we make conscious efforts to control and modify our automatically activated negative stereotypes. Research by Dovidio and colleagues (2002) suggests that "controlled" efforts to monitor behavior are manifested within verbal content, while automatic

racial attitudes are evident within non-verbal behaviors. However, until this point, researchers used relatively imprecise measures of non-verbal behavior: body orientation, direction of gaze, body position, subjective rating of behavior by coders, etc. In comparison, FACS allows for the identification of facial movements under voluntary control (e.g., the "social smile") and those which are difficult, if not impossible, to produce voluntarily (e.g., pulling the lip corners down or AU15). Furthermore, as discussed in more detail below, the tightening or compression of the lips during smiling (the "smile control") has been associated with the experience of embarrassment or self-awareness (Keltner, 1997). Thus, FACS not only distinguishes between controlled and non-controlled non-verbal behaviors but also identifies facial expressions associated with self-awareness, distinctions that become particularly intriguing in the present study given alcohol's theorized effects on cognitive control and self-awareness.

In sum, the Facial Action Coding System offers information about the affect and behavior of White study participants, and, moreover, supplies information about displayed vs. felt expressions and "self-aware" expressions. Thus, the current study aimed to add a new level of precision to the investigation of the affective experience and behavioral output of Whites engaging in interracial interactions.

1.7 INTERACTION LENGTH

The current study not only brings new precision to the measurement of non-verbal behaviors in interracial interactions through the use of FACS, but may also offer valuable new information regarding the behavior of Whites in protracted interracial interactions. This study involves, to my knowledge, the longest unstructured interracial interaction yet examined (36 minutes). In

previous research, interaction length ranged from 3 minutes to 15 minutes (Shelton & Richeson, 2006). Longer interaction time could affect behavior in a variety of ways.

In a review of the literature, Shelton and Richeson (2006) suggest that the substantial efforts at self-monitoring observed in individuals engaging in interracial interactions may wane and give way to fatigue in interactions lasting longer than 15 minutes. Therefore, it is possible that an extended interaction could lead to less self-monitoring and, perhaps, more "leakage" of negative affect and behaviors. However, research suggests that the opposite is also possible, and that stereotypes dissipate with longer interactions leading to more positive cognitions and behaviors. For example, stereotype activation is observed in individuals exposed to outgroup members for 15 seconds (Bargh, Chen, & Burrows, 1996). However, Kunda et al. (2002) found that prolonged exposure to outgroup members (12 minutes) eventually led to stereotype dissipation. As Whites garner more information about their interaction partner, race may become less salient. Further information to support this theory comes from research showing that Black individuals observing a White engaging in a 20 second silent interaction with an Black can accurately detect the individual's level of bias (Richeson & Shelton, 2005). However, Vorauer and Kumhyr (2001) found that Blacks engaging in a 15 minute conversation with a White individual could not detect that individual's level of bias. Of course, many factors varied between these studies and so it is impossible to conclusively attribute divergent findings to the length of the interaction, but it presents an intriguing possibility. In sum, the current study expanded the existing literature by investigating the progression of behavior and affect over time during the course of interracial interactions.

1.8 THE CURRENT STUDY AND STUDY HYPOTHESES

The current study represents a first attempt to examine the influence of alcohol on the behavior of White participants towards Blacks within an interactional framework. Participants interacted in groups of three for 36 minutes as they consumed either alcoholic or non-alcoholic beverages. I aimed to examine the behavior of Whites as they interacted with either two other White individuals or one White and one Black. White participants were randomly assigned to drink condition (alcohol, placebo or control) and racial group composition (one Black group member vs. all White) conditions. My three hypotheses focus on the emotional experience of Whites in interracial vs. racially homogenous interactions and the progression of these affective displays over the course of a 36 minute interaction. Most pertinent to the study were hypotheses regarding how alcohol would affect these interracial vs. racially homogenous experiences.

Because Whites experience discomfort and engage in efforts at self monitoring when interacting with members of racial minorities (Crocker, Major, & Steele, 1998; Stephan & Stephan, 2000), I predicted that Whites interacting in interracial groups would show more negative affect and expressions associated with presentational concerns and would engage in fewer displays of positive affect than those interacting in racially homogenous groups.

I also predicted a time by group racial composition interaction (Shelton & Richeson, 2006). Specifically, I predicted that at the beginning of the interaction, Whites in interracial groups would engage in fewer expressions of positive affect, more expressions of negative affect, and more expressions associated with presentational concerns than those in racially homogenous groups. I predicted that this difference would decrease and perhaps disappear with the passage of time during the interaction.

Finally, I hypothesized an alcohol condition by group racial composition interaction. I predicted that alcohol consumption would lead to a decrease in the self-awareness (or the facial displays associated therewith) experienced by Whites during interracial interactions (Hull, 1987). Moreover, I predicted that this decrease in self-awareness would be accompanied by a decrease in negative and an increase in positive affective displays among those participants consuming alcohol.

2.0 METHODS

2.1 PARTICIPANTS

Participants in the current study consisted of 96 White individuals (64 female, 32 male) in 48 groups. Participants were between the ages of 21 and 28. Participants were drawn from a parent study examining the effect of alcohol consumption on social bonding (N=719). In an effort to increase the perceived salience of race, participants from only same-gender groups were included in the study. Participants in the parent study were assigned to consume alcohol (expect alcohol, receive alcohol), placebo (expect alcohol, receive no alcohol), or control (expect no alcohol, receive no alcohol) in groups of three. Twenty four of the groups contained one Black member; the 48 White members of these groups comprised the critical (interracial group) participants in the current study. An additional 48 (homogenous group) participants were drawn from all-White groups. These groups were selected such that members of the groups matched the critical participants on gender and alcohol condition. Participants in the three drink conditions and two racial conditions did not differ significantly along other demographic characteristics (age, education, marital status) or along personality characteristics associated with non-verbal affective displays (see table 1 for unmatched and table 2 for matched participant characteristics). Study groups containing 2 Black and 1 White individual were not included in this study as the parent study contained only 8 such groups and statistical power would have been a major

limitation. Participants were recruited via advertisements in local newspapers. No participants were dependent on any substances other than nicotine or caffeine.

Table 1. Subject and Third Group Member Characteristics

	Two Target White Group Members			Third Group Member		
	Interracial Group Mean	All-White Group Mean	t-ratio (p value)	Black	White	Ratio (p value)
Extraversion	32.02	31.96	.041(.966)	31.83	33.08	F=.516 (.476)
Agreeableness	33.19	32.69	.402 (.688)	31.78	32.83	F=.357 (.553)
Age	22.27	22.50	-.601 (.55)	22.33	22.08	F=.276 (.602)
% Graduated College	42.6%	45.8%	-.361 (.720)	37.5%	45.8%	X^2=.34 (.77)
% Single	83.3%	83.3%	.000 (1.00)	91.7%	100%	X^2=2.09 (.49)

	Alcohol	Placebo	Control	t-ratio (p value)	Alcohol	Placebo	Control	Ratio (p value)
Extraversion	32.41	31.89	31.99	.426(.672)	30.25	34.23	31.95	F=3.423 (.071)
Agreeableness	33.28	32.61	33.10	.441 (.661)	32.19	31.95	33.20	F=.007 (.936)
Age	23.06	21.93	22.30	2.595 (.013)	22.44	22.27	21.70	F=.465 (.499)
% Graduated College	53.1%	44.2%	30.0%	1.24 (.221)	43.8%	36.4%	50%	X^2=.569 (.752)
% Single	75.0%	86.4%	90.0%	-1.353 (.183)	100%	95%	90%	X^2=1.56 (.46)

Table 2. Sample (Matched) Characteristics

	Alcohol	Placebo	Control
All-White Group	4 Male	8 Male	4 Male
	12 Female	14 Female	6 Female
One Black	4 Male	8 Male	4 Male
	12 Female	14 Female	6 Female

2.2 PROCEDURE

Procedures were modeled after Kirchner et al. (2006). Upon arrival in the lab, participants were casually and individually introduced to each other while their speech and behavior was observed by a FACS-certified experimenter to confirm that group members did not already know one another. Participants were also asked whether they were acquainted with other group members. Only those reporting no familiarity and showing no facial signs of recognition were included in the study. After signing consent, participants were asked to provide a breath sample in order to assess blood alcohol content (BAC), and to rate their perceived level of intoxication. All female participants took a pregnancy exam. Any participants who reported feeling intoxicated or who registered a positive BAC prior to the experiment were rescheduled. No female participants recorded a positive pregnancy test result. Participants consumed a weight-adjusted amount of food in order to standardize the rate of alcohol absorption across participants.

After completing a battery of self-report assessments, participants were seated at equidistant intervals around a round table. Cameras were positioned in all four corners of the room. Participants were originally told that the cameras were being used to monitor their drink

consumption. As participants were later informed (see below), the cameras also recorded participants' facial expressions. A microphone was placed in the room in order to record the conversation.

Drinks were mixed in front of all participants to increase credibility in the placebo conditions (Rohsenow & Marlatt, 1981). The researcher brought a tray, containing a chilled vodka bottle and a bottle of chilled cranberry juice cocktail, into the room in which participants were seated. The alcoholic beverage was 1 part 100 proof vodka and 3.5 parts cranberry juice. For those drinking alcohol, the vodka bottle contained 100-proof vodka; for those receiving placebo, the vodka bottle contained flattened tonic water. In the placebo group, the glass was smeared with vodka to enhance credibility of the placebo. Total beverage was isovolemic in the alcohol and placebo conditions. Participants in the alcohol and placebo conditions were informed that they would be receiving a drink containing alcohol and that the dose would be less than the legal limit for driving a car. Participants remained seated around the table for a total of 36 minutes. Beverages were administered in three equal parts at 0 minutes, 12-min, and 24-min. To adjust for gender effects, males in the alcohol condition were administered a .82g/kg dose of alcohol, while females were administered .74g/kg of alcohol (Sayette, Martin, & Perrott, 2001). Participants were asked to drink their beverages evenly over each of the 12 minute intervals and refrain from discussing how intoxicated they felt. Participants were recorded throughout the 36 minute session.

Following beverage administration, participants' BAC levels were measured and they were asked to complete the Perceived Group Reinforcement Scale (described below). Following the completion of some additional study assessments, BAC was again assessed. Placebo and control participants were then debriefed, paid $50, and allowed to leave. Participants in the

alcohol condition were asked to remain until their BAC levels dropped below .025%. Before leaving, participants were informed that the video equipment had monitored their behavior, and their consent to analyze this video data was obtained. Participants in the alcohol condition were provided with money for a taxi or bus (if necessary) and reminded not to drive or operate machinery for the remainder of the day.

All coding was performed by a certified FACS coder using Observer Video-Pro software (Noldus Information Technology, 2010). The Observer system allows researchers to time stamp all entries and synchronize group members' data, thereby preserving the flow and synchrony of the interaction. All video data were coded individually so that the facial expressions of only one group member are visible to the coder at any given time.

2.3 MEASURES

2.3.1 Assessment of Race/Ethnicity

As part of the standard demographics form (measuring age, marital status, gender, and SES) participants were asked to indicate their "racial" background. Participants were asked to indicate whether they were American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, Black/Black, White, or more than one race. As a separate item, participants were asked to indicate their "ethnic background" as either "Hispanic or Latino" or "Not Hispanic or Latino." Only those participants who identified as "White" and "Not Hispanic or Latino" were included in the proposed research. Participants in the interracial groups were selected if one of their fellow group members identified as "Black" and the other group member identified as White, non-

Hispanic. Gender was also assessed on the same form (Male or Female), and informed selection of participants in same-gender groups. Participants' self-reported race was cross-checked with video data. In the case of a discrepancy between video and self report data, video data were prioritized since the perceived race of participants was particularly germane to the current study. In 99% of cases self-reported race and the perceptions of study coders from videos were consistent. However, in one case, self-report and video data did not match. Whereas the participant rated herself as "other" two coders agreed that the participant would be perceived as White. The inclusion of this group did not affect the results of key tests of significance.

2.3.2 "Felt" Affect During the Interaction

The following measures were considered indications of "felt," rather than "displayed," affect and therefore were used to measure the affect experienced by study participants during the interactions in the current study. The following facial movements are either extremely difficult to produce voluntarily (Ekman, Roper, & Hager, 1980) or are simply more likely to be associated with "felt" affect (Ekman, 1989).

2.3.2.1 Positive Affect

A Duchenne smile is defined as the combined movement of the zygomaticus major muscle (AU 12), and obicularis oculi muscle (AU 6). The simultaneous movement of these two muscles has been shown to reflect positive affect (Frank, Ekman, & Friesen, 1993).

2.3.2.2 Negative Affect

Negative affect was defined as the appearance of any of the following AUs: 9 (nose wrinkle), unilateral 14 (dimpler), and 15 (lip corner depress), 20 (lip stretch). These AUs have been shown to correlate with participant's reporting of distinct negative affective states (Ekman et al., 1980).

2.3.3 Self-Awareness and Presentational Concerns

Smile controls—or the presence of actions that counteract the smile when seen together with the smile—have been associated with the reported experience of embarrassment or self-consciousness (Keltner, 1995). The duration of AU 23 or 24 together with a smile was used as an index of embarrassment (Keltner, 1997). Furthermore, certain facial movements have been reliably associated with display, rather than felt, affect. Smiles that engage the zygomaticus major muscle (AU 12), without the obicularis oculi muscle (AU 6), are not believed to reflect true positive affect and have been named "social smiles." Social smiles were considered as an indirect index of presentational concerns.

2.3.4 Discomfort/Anxiety

In research on interracial interactions, fidgeting has typically been interpreted as a sign of anxiety or discomfort (Shelton & Richeson, 2006; Shelton, 2003). Fidgeting has traditionally been measured by coders using a 7-point Likert scale (Shelton, 2003). In the current study, fidgeting was operationalized as the duration of face touching and the frequency with which participants drank study beverages. These two behaviors do not, of course, represent the full

repertoire of "fidgeting" behavior. However, they are as likely to reflect discomfort as other behaviors within this construct (Keltner, 1997), and the frequency and duration measures used in the current study may arguably prove a more reliable and objective measure than Likert scales used in previous research.

2.3.5 Self-reported bonding

The Perceived Group Reinforcement Scale (PGRS: Kirchner et al., 2006) is a measure of perceived group bonding including 11 items such as "I like this group" and "The members of this group are interested in what I have to say." Items for this measure were selected from the Group Attitude Scale (Evans & Jarvis, 1986) and the Perceived Cohesion Scale (Bollen & Hoyle, 1990). Each statement was rated on a 9-point Likert scale ranging from 1 "strongly agree" to 9 "strongly disagree" (alpha= .68).

2.4 RELIABILITY OF MEASUREMENT: FACS CODING

Independent raters were blind to drink condition and to the behavior of other group members. Reliability coding for facial and speech data was assessed on a random subset of 72 participants from the parent study. Overall, there were good levels of agreement for positive affect (κ=.88), negative affect (κ=.73), display affect (AU 12, κ = .84) and anxiety (κ=.89). Reliability was less strong for the "smile control" defined as AUs 23 or 24 acting together with a smile (κ's < .47). When smile controls were defined as encompassing not only 23 and 24 but also 14 and 15, reliability improved (κ=.65). However, research on self-consciousness indicates that

embarrassment is associated with AUs 23 or 24 when seen together with a smile, while AUs 14 and 15 accompanied by a smile do not reliably differentiate between embarrassed and amused participants in these studies (Keltner, 1995). Therefore, analyses were first conducted examining AUs 23 and 24 as a smile control, and then repeated and confirmed using the merged AUs with higher kappas.

2.5 DATA ANALYSIS PLAN

Data analysis had three primary objectives: 1) to determine whether Whites in mixed race groups engage in different affective displays than those assigned to racially homogenous groups; 2) to examine how these affective displays change over time in interracial vs. racially homogenous groups; and 3) to determine how alcohol consumption impacts the affective displays of Whites interacting in interracial vs. racially homogenous groups. Data in the current project were clustered or "nested" in groups of two, with Intraclass Correlations that exceed .55 for many AUs. Nested data structures with high positive Intraclass Correlations can lead traditional tests of statistical significance to be overly conservative, if independent variables vary within groups, or overly liberal, if independent variables vary between groups (Kenny, Mannetti, Pierro, Livi, & Kashy, 2002). Hierarchical Linear Modeling was used to account for nested data and also allow for an examination of the interaction between repeated measures over time and group level characteristics (research objective 2). For the current research project, my model involved 3 levels of analysis, accounting for time at level one, individual at level two, and group at level-3. As indicated by Kenny, Kashy, Cook, and Simpson (2006), Hierarchical Linear Models can be applied to individuals in clusters of two, assuming individual-level slopes are estimated as

fixed—the clustering of individuals within groups is modeled in the random component of the intercept. As the research questions under examination pertained to within-individual and between-group differences (i.e. do not require individual-level slopes), these limitations had no impact on the current research project.

Exploratory analyses indicated that the outcome variables were not normally distributed, containing a large proportion of zero values with higher values becoming increasingly less frequent/ Therefore, Hierarchical Generalized Linear modeling, assuming a Poisson distribution, was used in order to account for the violation of normality assumptions (Agresti, Booth, Hobert, & Caffo, 2000). Results from models with "robust standard errors" were used to protect against potential violations of model assumptions. As the primary research questions are most relevant to the "typical" interracial group, rather than an "average" level-1 unit, results from the Unit Specific model were reported. Overdispersion of level-1 variance was measured and offset in the analyses (Raudenbush & Bryk, 2002).

2.5.1 Main Effect of Race and Race by Alcohol Interaction (Objectives 1 and 3)

Equations relevant to research objectives 1 and 3 employ identical level-1 and level-2 models (neither involving an examination of time at level-1) and similar level-3 equations. Equation 1 models the natural logarithm of within-individual expressed affect as a function of average individual-level differences (π_{0ij}) and a random variance component (ε_{tij}). Expressed affect was measured as the total time in seconds spent displaying any of the selected AUs noted above during a given time segment (except for the "DrinkFrequency", which was measured as a count variable). Discrete analyses were run to examine each of these eight AUs individually, though

the same overall model structure was used in each case. The umbrella term "expressed affect" is used broadly to refer to all dependent variables

Equation 1

$$ln\ (ExpressedAffect_{tij}) = \pi_{0ij} + \varepsilon_{tij}$$

Consistent with past research examining non-verbal displays, units of time were represented in one minute bins (Boker et al., 2011). Twice during the interaction the investigator entered the room to refill drinks (minutes 11 and 12, and minutes 23 and 24), and FACS data were not recorded during these minutes. In the event that a given minute of the interaction was only partially coded for a group, that minute was marked as missing for that group. At minute 25 data from 1 group was missing, at minute 13 data from 4 groups were missing, and data from approximately 25% of groups is missing at minute 36. FACS data were also not collected for the first few seconds of the first minute while the investigator was leaving the room.

Equation 2

$$ln\ (ExpressedAffect_{tij}) = \pi_{0ij} + \varepsilon_{tij}$$

Equation 2 models the between-person expressed affect of individual "i" at time "t" in group "j" as a function of average group-level differences (β_{ooj}) and a random variance component (r_{0ij}). The random effect (r_{0ij}) was included to model unexplained between-individual variance at level-2.

Equation 3

$$\beta_{00j} = \gamma_{000} + \gamma_{001} Gender + \gamma_{002}\, GrpRacialComp + \gamma_{003}\, AlcoholVs.NoAlc + \gamma_{004}\, RaceXAlc + \gamma_{005}\, PlaceboVs.Control. + \gamma_{006}\, RaceXPlc + \gamma_{007}\ ThirdGrpMemb + \mu_{000}$$

Here, group characteristics were used to predict average expressed affect among the two target group members. All relevant predictors were entered at this level. All predictors were centered and contrast coded to protect against multicollinearity with multiple interaction terms. Furthermore, a dichotomous "*AlcoholVs.NoAlc"* variable was created which, together with

PlaceboVs.Control, represents a complete orthogonal set of contrast codes aimed to maximize the power to test this key study hypothesis (the interaction between alcohol and group racial composition). The significance of the *GrpRacialComp* slope coefficient in equation 3 (γ_{002}) was tested to determine whether Whites in interracial groups engage in different affective displays than those in racially homogenous groups.

Most crucial to the present study, equation 3 was then built to include a variable representing the interaction between group racial composition and alcohol condition. The significance of the *RaceXAlc* slope coefficient in equation 3 (γ_{004}) was tested to determine whether alcohol consumption impacts the affective displays of Whites engaging in interracial groups vs. those in racially homogeneous groups. In other words, I tested whether alcohol condition (*AlcoholVs.NoAlc)* moderates the impact of group racial composition (*RaceComp*) on between group non-verbal affective displays (π_{0i}). The effects of gender were controlled for at this level. Since only same-gender groups were selected for the proposed research, groups were categorized as all-male or all-female. This gender variable was highly correlated with affective displays and thus was included in order to account for variance in the outcome and increase power. For those AUs that were only coded in the presence of a second AU (e.g., smile controls were only coded in the presence of smiles) a variable reflecting the average duration of this second AU was included at level 3.

Finally, the mean duration of the third group member's affective displays was included at level 3 in order to control for the potential for mutual non-verbal influence within groups. The inclusion of this variable helped ensure that any significant group differences were specific to the sample under observation and not, for example, the indirect result of racial differences in affective displays mimicked by study participants. FACS data was not coded from minutes 3-11

for 80% of third group members. However, analyses indicated that there were no significant differences between the affective displays coded during these minutes and affective displays during the rest of the interaction. It seems reasonable to assume that those minutes that were coded are representative of the affective displays of this third group member across the interaction.

2.5.2 Time by Racial Composition Interaction (Research Objective 2)

In order to test the interaction between racial group composition and time during the interaction, or test whether Whites in interracial vs. racially homogenous groups show different trajectories of affective displays over the course of an interaction, a three-level model was built including time at level-1. As in previous analyses, time was represented in 1-minute bins.

Equation 4

$$ln\ (ExpressedAffect_{tij}) = \pi_{0ij} + \pi_{1ij}\ (time_{tij}) + \pi_{2ij}\ (time_{tij})^2 + \varepsilon_{tij}$$

Equation 4 models within-individual differences in the natural logarithm of expressed affect as a function of average individual-level affect (π_{0ij}), a linear time component (π_{1ij}) and a random variance component (ε_{tij}). This equation was then built to include a quadratic time component (π_{2ij}),

Equation 5

$$\pi_{0ij} = \beta_{ooj} + r_{0ij}$$

Equation 6

$$\pi_{1ij} = \beta_{1oj} + r_{1ij}$$

Equation 7

$$\pi_{2ij} = \beta_{2oj} + r_{2ij}$$

At level-2 (equations 5-7), between-individual differences in expressed affect at time 0 (π_{0ij}), the linear relationship between time and expressed affect (π_{1ij}) and the quadratic time component (π_{2ij}) are modeled as a function of mean group differences and a random individual-variance component.

Equation 8

$$\beta_{00j} = \gamma_{000} + \gamma_{001} Gender + \gamma_{002}\, GrpRacialComp + \gamma_{003}\ ThirdGrpMemb + \mu_{000}$$

Equation 9

$$\beta_{10j} = \gamma_{100} + \gamma_{101} Gender + \gamma_{102}\, GrpRacialComp + \gamma_{103}\ ThirdGrpMemb + \mu_{100}$$

Equation 10

$$\beta_{20j} = \gamma_{200} + \gamma_{201} Gender + \gamma_{202}\, GrpRacialComp + \gamma_{203}\ ThirdGrpMemb + \mu_{200}$$

At level 3 (Equations 8-10), group-level predictors were used to model between-group differences in the trajectories of displayed affect over time over the course of the interaction. The significance of the *GrpRacialComp* coefficient predicting the linear (γ_{102}) and quadratic slope components (γ_{102}) were used to test whether there was a significant interaction between time during the interaction and group racial composition on expressed affect.

3.0 RESULTS

3.1 BEVERAGE MANIPULATION CHECK

BACs and measures of subjective intoxication appear in Table 3. Participants administered alcohol recorded a mean BAC of .055% immediately following the interaction period. All placebo and alcohol participants estimated that they had consumed at least 1 ounce of vodka. Consistent with our prior studies (e.g., Sayette et al., 2001), placebo participants reported experiencing some level of intoxication, more than control participants and less than alcohol participants.

Table 3. Beverage Response Variables

	Alcohol		*Placebo*		*Control*		
Characteristic	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*χ2*
BAC Postdrink	0.055 [a]	0.013	0.001 [b]	0.001	0.001 [b]	0.001	16.34**
SIS Postdrink	36.84 [a]	17.81	17.16 [b]	10.76	0.00 [c]	0.00	36.70**
Highest Intox.	37.27 [a]	20.40	17.48 [b]	9.87	1.05 [c]	3.47	54.02**
Vodka Estimate	6.86 [a]	9.94	3.33 [b]	2.02	0.1 [c]	.308	15.39**

* $p = < .05$ ** $p = < .001$

Notes. BAC = blood alcohol concentration. SIS = subjective intoxication scale. SIS and Highest Intox. were scored on scales ranging from 0 to 100. Groups with non-overlapping superscripts differed significantly ($p < .05$).

3.2 DESCRIPTIVE STATISTICS

Among the selected AUs coded in this study, the most frequently observed expression was the social smile (displayed for a mean duration of 11.29 seconds per minute), followed by Duchenne or "true" smiles (mean duration 6.46 seconds per minute). Participants spent less time displaying AUs associated with negative affect, engaging some of these actions for as little as .06 seconds per minute (AU 20 and the "nose wrinkle"). See Table 4 for a summary of observed AU durations across time during the interaction. The mean seconds per minute participants spent touching their faces, displaying AU 20, and displaying AU 9 ("nose wrinkle") increased significantly over the course of the interaction ($t=2.71$, $df=47$, $p=.009$; $t=3.25$, $df=47$, $p=.002$; $t=2.42$, $df=47$, $p=.02$). The average amount of time participants spent displaying social smiles declined approximately .2 seconds per minute across the course of the 36 minute interaction ($t=-6.54$, $df=47$, $p<.001$). Duchenne smiles, AUs 14 and 15, smile controls, and drink frequency did not change significantly over time during the interaction. Correlations between outcome measures, including self-reported group bonding (PGRS), are listed in Table 5. As correlations between negative AUs are very low (none of them exceeding .1) and research has linked these actions to distinct negative affective states (Ekman et al., 1980), these AUs were considered in separate models.

Table 4. AU Duration in Seconds per Minute Across Time During Interaction

	Three Minute Intervals During Interaction												
	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33-35	Average
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*
Social Smile	13.14 (11.45)	15.09 (11.25)	13.8 (11.17)	13.67 (10.52)	10.24 (10.12)	10.68 (10.07)	9.77 (8.81)	10.65 (9.69)	9.38 (8.92)	10.53 (10.07)	9.79 (9.37)	8.77 (8.61)	11.29 (10.27)
Duchenne Smiles	8.81 (8.53)	5.85 (7)	6.03 (7.9)	5.22 (7.17)	5.58 (6.91)	5.98 (7.38)	5.77 (7.06)	7.17 (8.38)	7.64 (9.76)	7.29 (9.27)	6.26 (8.24)	5.94 (8.02)	6.46 (8.03)
Smile Control	0.72 (1.5)	0.38 (0.81)	0.39 (1.03)	0.32 (0.71)	0.57 (1.34)	0.54 (1.02)	0.56 (1.04)	0.56 (1.01)	0.53 (1.34)	0.52 (1.04)	0.4 (0.98)	0.54 (1.34)	0.5 (1.12)
Nose Wrinkle	0.04 (0.24)	0.01 (0.1)	0.02 (0.12)	0.04 (0.27)	0.09 (0.32)	0.1 (0.41)	0.10 (0.48)	0.09 (0.31)	0.08 (0.31)	0.06 (0.3)	0.08 (0.43)	0.07 (0.29)	0.06 (0.32)
AU 14 and 15	1.26 (1.54)	0.78 (1.25)	0.71 (1.2)	0.67 (1.13)	1.14 (1.66)	1.27 (1.7)	1.30 (1.83)	1.19 (2.01)	1.12 (1.65)	1.23 (2.56)	1.21 (2.5)	1.11 (1.98)	1.09 (1.84)
AU 20	0.04 (0.19)	0.04 (0.19)	0.1 (0.57)	0.03 (0.15)	0.08 (0.29)	0.05 (0.21)	0.05 (0.25)	0.06 (0.45)	0.10 (0.4)	0.07 (0.25)	0.05 (0.23)	0.05 (0.23)	0.06 (0.31)
Face Touch	3.93 (9.68)	4.75 (11.22)	4.25 (10.09)	4.32 (10.25)	4.11 (8.99)	4.3 (9.63)	5.5 (10.68)	4.93 (10.8)	6.11 (11.8)	5.00 (11)	3.91 (8.65)	4.65 (9.95)	4.59 (10.19)
Drink Frequency	1.11 (0.84)	0.59 (0.62)	0.59 (0.63)	0.77 (0.75)	0.7 (0.6)	0.76 (0.7)	0.75 (0.65)	0.85 (0.75)	0.69 (0.62)	0.8 (0.68)	0.78 (0.71)	0.94 (0.85)	0.78 (0.72)

*p<.05, **p<.01, ***p<.001

Table 5. Correlations Between Outcome Variables

	Duchenne	Social Smile	Smile Cntrl	Nose Wrnk	AU 14 & 15	AU 20	Face Touch	Drink Freq	PGRS
Duchenne Smile	1								
Social Smile	.247**	1							
Smile Control	.173**	.153**	1						
Nose Wrinkle	-.064**	-.002	.004	1					
AU 14 & 15	-.081**	-.091**	.083**	.091**	1				
AU 20	.008	.012	.009	.055**	.077**	1			
Face Touch	-.044*	-.049**	-.044*	.005	-.065**	-.001	1		
Drink Frequency	-.001	-.099**	.081**	-.008	.058**	-.006	-.035*	1	
PGRS Scale	.185**	.025	-.002	-.027	-.115**	.029	-.011	-.029	1

3.3 AIM 1: MAIN EFFECTS GROUP RACIAL COMPOSITION

Contrary to study hypotheses, Whites interacting in groups with Blacks spent significantly less time displaying AU 9 (the "nose wrinkle"), than Whites interacting in racially homogenous groups. Whites interacting in interracial groups (M=.015 seconds/minute) spent less time displaying nose wrinkles than did those interacting in racially homogenous groups (M=.042 seconds/minute), controlling for gender and alcohol condition (see Table 7). The number of seconds the third group member spent displaying the "nose wrinkle" was not a significant predictor of the behavior of the target subject—this variable was dropped from the final model. Group racial composition was a significant predictor of duration of "nose wrinkling" regardless of the inclusion of the third group member's behavior in the model. Furthermore, the analyses were duplicated substituting the duration of nose wrinkling observed in the third group member as the outcome variable, and there were no significant differences (or trends) between Black and White third group members in seconds spent displaying the "nose wrinkle" (p=.67). The introduction of the variable reflecting group racial composition led to an 82% decrease in variance between groups in duration of "nose wrinkling" at level-3, after partialling out variance attributable to alcohol and gender. No significant main effects of group racial composition were observed along any other outcome variables (see Table 6).

Table 6. Summary of Main and Interactive Effects (AUs in Seconds/Minute)

	Main Effects Group Racial Composition		
Behavior	Interracial Group Mean (SD)	All-White Group Mean (SD)	t-ratio (p value)
Duchenne Smile	6.419 (8.212)	6.509 (7.838)	-.013 (.99)
Social Smile	10.635 (10.349)	11.934 (10.142)	-1.075 (.288)
Smile Control	.550 (1.24)	.453 (.969)	.721 (.475)
Nose Wrinkle	.015 (.224)	.042 (.394)	-3.035 (<.001)
AU 14 & 15	.888 (1.601)	.804 (1.704)	.376 (.709)
AU 20	.054 (.274)	.065 (.346)	-.390 (.698)
Face Touch	4.966 (11.082)	4.226 (9.215)	.518 (.607)
Drink Frequency	.788 (.716)	.766 (.729)	.410 (.683)
PGRS Scale	7.100 (1.319)	6.984 (1.342)	.401 (.689)

	Race by Time Interactions		Race by Alcohol Interactions	
	Event Rate Ratio	t-ratio (p value)	Event Rate Ratio	t-ratio (p value)
Duchenne Smile	1.006	.980 (.327)	.749	-.730 (.469)
Social Smile	.996	-.457 (.650)	.826	-.544 (.589)
Smile Control	1.003	.489 (.877)	.431	-2.592 (.013)
Nose Wrinkle	1.033	.105 (.917)	.832	-.025 (.807)
AU 14 & 15	.942	-.290 (.772)	.709	-.851 (.400)
AU 20	1.029	1.867 (.068)	1.290	.436 (.665)
Face Touch	1.005	.633 (.530)	1.92	1.414 (.164)
Drink Frequency	.999	-.107 (.915)	.942	-.385 (.702)
PGRS Scale	N/A	N/A	N/A	-.748 (.456)

Table 7. Model Predicting Duration AU9 without AU 12 (Overdispersed Poisson)

Fixed Effects					
	Model 1	Model 2	Model 3	Model 4	Model 5
	Coeff:(SE)	*Coeff:(SE)*	*Coeff:(SE)*	*Coeff:(SE)*	*Coeff:(SE)*
Intercept	-3.42 (.18)***	-3.59 (.18)***	-3.62 (.17)***	-3.76 (.19)***	-3.67 (.17)***
Gender		.79 (.37)*	.78 (.33)*	.78 (.33)*	.75 (.31)*
AlcoholVs.NoAlc		-1.16 (.38)**	-1.15 (.35)**	-1.17 (.38)**	-1.07 (.34)**
PlaceboVs.Control		-.47 (.40)	-.46 (.36)	-.48 (.34)	
ThirdGrpMembAU9no12		-.86 (.54)	-.03 (.68)	-.09 (.59)	
GrpRacialComp			-1.00 (.29)***	-1.02 (.29)***	-1.00 (.29)***
RaceXAlc				-23 (.75)	
RaceXPlc				-.33 (.66)	
Variance Components					
Variance btw. Groups	56	.29	.05	.05	.05
Variance btw. individs	1.06	1.05	1.13	1.17	1.17
Level-1 Error	.66	.66	.66	.66	.66

*p<.05, **p<.01, ***p<.001

3.4 AIM 2: TIME BY GROUP RACIAL COMPOSITION INTERACTIONS

There were no significant interactions between the linear or quadratic time components and group racial composition. Whites interacting in racially homogeneous groups did not differ from those assigned to interracial groups in the progression of their affective displays over time during the interaction as modeled by linear or quadratic time components.

3.5 AIM 3: INTERACTIONS BETWEEN ALCOHOL CONDITION AND GROUP RACIAL COMPOSITION

As hypothesized, there was a significant interaction between alcohol condition and group racial composition in predicting the amount of time participants spent controlling their smiles during the interaction (see Table 8). Further analyses indicated that this interaction followed the predicted pattern (Model 5). Among those participants not drinking alcohol, Whites in interracial groups spent more time controlling their smiles (M= .51 sec/min) than did those assigned to racially homogeneous groups M =.32 sec/min, controlling for gender (t=2.40, p=.02). In contrast, among those Whites assigned to consume alcohol, there was no significant difference in the duration of smile controls between those assigned to interracial vs. racially homogenous groups, controlling for gender (t=-1.38, p=.17). There was no significant interaction between the placebo vs. control contrast and group racial composition in predicting smile control duration.

Since smile controls are coded only in the presence of a smile, a variable reflecting the duration of smiling was entered into the model. However, neither this variable nor the variable reflecting the duration of smile controls displayed by the third group member proved to be significant predictors of smile control duration among study participants. The race by alcohol condition interaction term was a significant predictor of smile control duration regardless of the inclusion of these variables in the model, suggesting that this effect was unlikely to be driven by the behaviors of the third group member or increased levels of smiling. Analyses were duplicated substituting smile control duration among third group members as the outcome variable and no race by alcohol condition interaction, or trend towards an interaction, was observed (t=.06, p=.95).

The model building procedure reported in Table 6 produced unwieldy Level-3 variance components, sometimes increasing with the introduction of highly significant variables. This peculiarity may be due to multicollinearity among the non-significant predictors entered into the model. When only significant variables and main effects were included in the model building procedure, the interaction between alcohol condition and group racial composition accounted for a 39% reduction in between-group variance, after partialling variance due to the main effects of alcohol condition and group racial composition.

Due to the relatively low reliability of coders in differentiating among certain AUs when seen in combination with a smile, models were also constructed predicting smile controls defined as AUs 14, 15, 23 or 24 together with a smile to confirm the validity of the smile control results (Keltner, 1995). These models also indicated a significant interaction between alcohol condition and group racial composition in predicting smile controls (t=-2.14, df=43, p=.038). However, models isolating AUs 14 and 15 combined with the smile did not find a significant interaction

between alcohol and group racial composition (t=.67, df=44, p=.99), indicating that the interaction of this larger group of AUs was primarily driven by the combination of the smile with AUs 23 and 24.

The interaction between alcohol and group racial composition was not a significant predictor of outcome variables other than smile control duration.

Table 8. Model Predicting Duration Smile Controls (Overdispersed Poisson)

Fixed Effects					
	Model 1	Model 2	Model 3	Model 4	Model 5
	Coeff:(SE)	*Coeff:(SE)*	*Coeff:(SE)*	*Coeff:(SE)*	*Coeff:(SE)*
Intercept	-0.98 (.10)***	-1.32 (.16)***	-1.31 (.16)***	-1.31 (.14)***	-1.11 (.09)***
Gender		.31 (.20)	.31 (.19)	.34 (.18)	
AlcoholVs.NoAlc		-.83 (.17)***	-.83 (.18)***	-.82 (.17)***	-.76 (.18)***
PlaceboVs.Control		.01 (.23)	.01 (.23)	.00 (.22)	
ThirdGrpMembCntrlD		.07 (.05)	.07 (.05)	.04 (.05)	
Smile Duration		.01 (.01)	.01 (.01)	.01 (.01)	
GrpRacialComp			.13 (.19)	-.02 (.17)	-.02 (.18)
RaceXAlc				-.79 (.33)*	-.84 (.35)*
RaceXPlc				-.01 (.45)	
Variance Components					
Variance btw. Groups	.23	.02	.02	.03	.06
Variance btw. individs	.44	.45	.46	.42	.45
Level-1 Error	1.54	1.54	1.54	1.54	1.54

*p<.05, **p<.01, ***p<.001

4.0 DISCUSSION

This study used the Facial Action Coding System to examine the impact of alcohol on White individuals' emotional experiences as they interacted in interracial vs. racially homogeneous groups. Results did not reveal effects of alcohol on expressions thought to be related to specific "basic" positive and negative emotions. However, as predicted, alcohol consumption did moderate the impact of group racial composition on the duration of smile controls—a facial expression that has been associated with "self conscious emotions" such as embarrassment (Keltner, 1995). While sober, White participants in interracial groups controlled their smiles considerably more than did Whites assigned to racially homogeneous groups. With alcohol consumption, differences between Whites in mixed race vs. racially homogeneous groups disappeared. This set of findings provides preliminary evidence that the consumption of alcohol may reduce feelings of discomfort and self-awareness that often accompany interracial interactions (Crocker, Major, & Steele, 1998; Stephan & Stephan, 2000).

While consistent with theories of alcohol's impact on self-awareness (Hull, 1981) and theories of modern prejudice (Crandall & Eshleman, 2003), the current study could also inform our understanding of the processes involved in interracial interactions. Previous studies have used static race cues to examine the interaction between alcohol consumption and racial attitudes (Bartholow et al., 2006; Schlauch et al., 2009; Reeves & Nagoshi, 1993; Cunningham et al., 2006). However, racial attitudes are only one of many predictors of the behavior and affective

experience of Whites in interracial interactions. The current study draws attention to presentational concerns as an important aspect of affective experience during these interactions, concerns that are difficult to study in a non-interactive framework.

While study hypotheses specific to alcohol and presentational concerns were confirmed, my hypothesis that a reduction in these presentational concerns would be linked to an increase in positive and a decrease in negative affective displays was not supported in the current study. Vorauer and Turpie (2004) found that the impact of self-awareness on the frequency of intimacy-building behaviors during interracial interactions was moderated by participants' racial attitudes: increasing self-awareness in low prejudiced Whites led to an increase in intimacy-building behaviors during interracial interactions, while this manipulation of self-awareness had the opposite impact on high-prejudice participants. Thus, while alcohol consumption decreases feelings of self-awareness and discomfort during interracial interactions, the effect of decreasing self-awareness on displays of positive and negative affect may vary depending on the individual in question. Future research is indicated to examine individual difference variables that may moderate the link between smile controls and affective displays.

Research has indicated that the majority of Whites hold implicit negative racial attitudes towards Blacks, and that these implicit attitudes are manifested through a variety of channels including through non-verbal behaviors (Dovidio et al., 2002; Gaertner & Dovidio, 1986). Using a sensitive measure of facial movement, the experimental paradigm used in the current study did not find support for these assumptions. Whites in interracial groups showed strikingly similar positive and negative affective displays to those in racially homogeneous groups. Moreover, contrary to hypotheses, Whites interacting in interracial groups spent less time displaying facial expressions associated with the subjective experience of disgust (AU9) than did those assigned

to racially homogeneous groups. In retrospect, this finding may be consistent with theories surrounding facial expression of affect and research on interracial interactions. Ekman (1972) postulates that the expression of emotion is governed by a combination of biological potentiation and culturally defined display rules. Since proposing this neurocultural model, Ekman and others have bid to differentiate those facial expressions under conscious control from those that occur outside of conscious awareness (Ekman & Friesen, 1982; Ekman, Friesen, & O'Sullivan, 1988). Initial studies indicating a link between the subjective experience of disgust and the appearance of AU 9 tested participants in isolation as they viewed film clips (Ekman, et al., 1980). Subsequent research indicates that facial expressions associated with disgust may not correspond as strongly to emotional experience when participants are tested in social settings. For example, Soussignan and Schaal (1996) found that children reliably displayed AU 9 in response to a noxious smell only when tested in isolation but not when tested in the presence of a stranger.

During interracial interactions, Whites report concern about appearing racist (Crandall & Eshleman, 2003). The affective experience of disgust has been linked to prejudice (Hodson & Costello, 2007), with some research linking disgust to the most extreme forms of prejudice (Taylor, 2007). One potential explanation for my finding with AU 9 is that study participants, in an effort to avoid appearing racist, may inhibit their expression of disgust in interracial interactions. Given this speculative explanation, it is perhaps unsurprising that alcohol did not impact the relationship between group racial composition and expressions of disgust. Research indicates that in many parts of the United States there exists a strict societal taboo against the expression of extreme prejudice against racial minorities (Crandall, Eshleman, & O'Brien, 2002). Generally speaking, alcohol has not been found to disinhibit behavior that represents an

extreme violation of societal norms (MacAndrew & Edgerton, 1969). Research examining affective expression is still evolving, and it is likely that future studies will indicate that not only the type of expression but also the strength and type of the social interaction moderate the extent to which facial movements are under voluntary control.

As indicated above, this study produced interesting findings but also yielded a number of null results. A variety of explanations might be posited for these non-significant findings. Due to the relatively small size of the sample employed in the current study, statistical power may have been a limiting factor. Future research is needed to examine whether individual difference variables, such as measures of prejudice, moderate the additive and interactive effects examined in this study. My examination of the progression of affective expression over time may have been limited by the relatively basic regression approach used to model this process. A graphical examination of data indicated that affective experience follows a complex trajectory over time, and more sophisticated time-series methods may best model these processes. Finally, future analyses should examine the extent to which the Black group member is being included in affective displays and conversational interchanges—theoretically, it is plausible that the null results observed in the current study represent exchanges between the two Whites in interracial groups excluding the Black (see Table 9 for supplementary analyses).

Table 9. Supplementary Analyses, Social Inclusion of Third Group Member in Interaction

	Black in Interracial Group	Third Group Member in homogeneous Group	
	Mean (SD)	Mean (SD)	t-ratio (p value)
ct not smiling while both other group ers Duchenne smile (sec/min) †	1.47 (3.30)	.90 (1.93)	.71 (.46)
ct is Duchenne smiling while neither of other members smile (sec/min)†	2.22 (3.48)	3.11 (4.49)	-1.01 (.32)
other group members smile while subject s (sec/min)††	20.68 (1.95)	16.77 (1.84)	.44 (.66)
ge pause length after subject speaks (sec)	3.72 (7.57)	3.45 (7.57)	.63 (.53)
ency subject is first to speak in triadic speech (all three group members speak in ssion) †††	.23 (.47)	.19 (.43)	.48 (.63)

ysis controls for subject's duration of Duchenne smiling ††Analysis controls for the frequency with which subject s while they speak ††† Analysis controls for the frequency with which the subject speaks

Additionally, it is possible that different results would have been obtained had a low or high (rather than the moderate) dose of alcohol been employed, or had participants interacted while their blood alcohol content was descending (rather than rising, as in the current study). The current study examines the behavior of Whites as they interact in groups with one White and one Black. The salience of the race of the Black group member might have been enhanced by examining Whites interacting in mixed race vs. racially homogeneous dyads. Furthermore, future research should examine whether the significant results observed in this study are specific to Whites interacting with Blacks, and whether they generalize to other group racial configurations and groups that are heterogeneous along dimensions other than race.

Despite its limitations, the current study represents an important step forward in examining alcohol's impact on race relations in an interactive framework. Supplementing previous research emphasizing racial attitudes as a predictor of behavior, it highlights the

potential influence of the subjective experience of discomfort and self-consciousness in defining modern race relations.

BIBLIOGRAPHY

Agresti, A., Booth, J., Hobert, J., & Caffo, B. (2000). Random-effects modeling of categorical response data. *Sociological Methodology*. 30, 27-81.

Allport, G. W. (1954). *The nature of prejudice.* New York: Addison-Wesley.

Ashmore, R. D., & Del Boca, F. K. (1981). Conceptual approaches to stereotypes and stereotyping. In D. L. Hamilton (ed.), *Cognitive processes in stereotyping and intergroup behavior.* (pp. 1-35). Hillsdale, NJ: Erlbaum.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects on trait construct and stereotype activation on action. *Journal of Personality and Social Psychology*, 71, 230-244.

Bartholow, B. D., Dickter, C. L., & Sestir, M. A. (2006). Stereotype activation and control of race bias: cognitive control of inhibition and its impairment by alcohol. *The Journal of Personality and Social Psychology*, 90, 272-87.

Bartholow, B. D., Pearson, M. A., Gratton, G., & Fabiani, M. (2003). Effects of alcohol on person perception: a social cognitive neuroscience approach. *The Journal of Personality and Social Psychology*, 85, 627-38.

Berglas, S. (1987). Self-handicapping model. In H. T. Blane & K. E. Leonard (Eds.), *Psychological theories of drinking and alcoholism* (pp. 305-345). New York*:* Guilford Press.

Boker, S. M., Cohn, J. F., Theobald, B. J., Matthews, I., Mangini, M., Spies, J. R., et al. (2011). Something in the way we move: Motion, not perceived sex, influences nods in conversation. *Journal of Experimental Psychology: Human Perception and Performance*, 37(3), 874-891.

Bollen, K. A., & Hoyle, R. H. (1990). Perceived cohesion: A conceptual and empirical examination. *Social Forces*, 69, 479-504.

Cheryan, S. & Bodenhausen, G. V. (2000). When positive stereotypes threaten intellectual performance: The psychological hazards of “model minority” status. *Psychological Science,* 11, 399-402.

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

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

Crandall, C. S., Eshleman, A, & O'Brien L. (2002). Social norms and the expression and suppression of prejudice: the struggle for internalization. *Journal of Personality and Social Psychology*. 82, 359–78.

Crocker, J., & Garcia, J. A. (2009). Downward and upward spirals in intergroup interactions: The role of egosystem and ecosystem goals. In T. D. Nelson (Ed.), *Handbook of prejudice, stereotyping, and discrimination* (pp. 229-245). New York: Psychology Press.

Crocker, J., Major, B., & Steele, C. (1998). Social prejudice. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Ed.), *The handbook of social psychology* (4th ed., Vol. II, pp. 504-553). Boston: McGraw Hill.

Cunningham, S. J., Milne, A. B., & Crawford, J. R. (2007). The effects of acute alcohol intoxication on person memory: The stereotypical drunk. *Journal of Applied Social Psychology*, 37, 187–199.

Devine, P. G., Plant, E. A., Amodio, D. M., Harmon-Jones, E., & Vance, S. L. (2002). The regulation of explicit and implicit race bias: The role of motivations to respond without prejudice. *Journal of Personality and Social Psychology*, 82, 835-848.

Dovidio, J. F., Brigham, I. C., Johnson, B. T., & Gaertner, G. L. (1996). Stereotyping, prejudice, and discrimination: Another look. In N. Macrae, C. Stangor, & M. Hewstone (Eds.*), Stereotypes and stereotyping* (pp. 276-319). New York: Guilford.

Dovidio, J. F., Kawakami, K., & Gaertner, S. L. (2002). Implicit and explicit prejudice and interracial interactions. *Journal of Personality and Social Psychology*, 82, 62-68.

Dovidio, J. E, Major, B., & Crocker, J. (2000). Prejudice: Introduction and overview. In T. F. Heatherton, R. E. Kleck, M. R. Hebl, & J, G. Hull (Eds.), *Prejudice: Social psychological perspectives* (pp. 1-28). New York: Guilford.

Ekman, P. (1972). Universal and cultural differences in facial expressions of emotion. In J. Cole (Ed.), Nebraska symposium on motivation, 1971 (pp. 207-283). Lincoln: University of Nebraska Press.

Ekman, P. (1989). The argument and evidence about universals in facial expressions of emotion. In H. Wagner & A. Manstead (Eds.), *Handbook of Social Psychophysiology* (pp. 143-164). Chichester: John Wiley Ltd.

Ekman, P., & Friesen, W. V. (1982). Felt, false, and miserable smiles. *Journal of Nonverbal Behavior*, 6, 238-252.

Ekman, P., Friesen, W. V., & Ancoli, S. (1980). Facial signs of emotional experience. *Journal of Personality and Social Psychology,* 39, 1125–1134.

Ekman, P., Friesen, W. V., & O'Sullivan, M. (1988). Smiles when lying. *Journal of Personality and Social Psychology,* 54, 414-420.

Ekman, P., Hager, J. C., & Friesen, W. V. (1981). The symmetry of emotional and deliberate facial actions, *Psychophysiology*, 18, 101-106.

Ekman, P., Roper, G., & Hager, J. C. (1980). Deliberate facial movement, *Child Development*, 51, 886-891.

Ekman, P. & Rosenberg, E. L. (2005). *What the face reveals: Basic and applied studies of spontaneous expression using the Facial Action Coding System (FACS).* New York, Oxford University Press

Evans, N. J., & Jarvis, P. A. (1986). The group attitude scale: A measure of attraction to group. *Small Group Research*, 17, 203-216.

Feagin, J. R., & O'Brien, E. (2004). *White men on race*. Boston: Beacon.

Frank, M., Ekman, P., & Friesen, W. (1993). Behavioral markers and recognizability of the smile of enjoyment. *Journal of Personality and Social Psychology*, 64, 83-93.

Gaertner, S. L., & Dovidio, J. F. (1986). The aversive form of racism. In S. L. Gaertner & J. F. Dovidio (Eds.), *Prejudice. Discrimination, and Racism* (pp. 61-89). New York: Academic Press.

Hebl, M. R. & Dovidio, J. F. (2005). Promoting the "social" in the examination of social prejudices. *Personality and Social Psychology Review,* 9, 156-182.

Hodson, G., & Costello, K. (2007). Interpersonal disgust, ideological orientation, and dehumanization as predictors of intergroup attitudes. *Psychological Science*. 18, 691–698.

Hull, J. G. (1981). A self-awareness model of the causes and effects of alcohol consumption. *The Journal of Abnormal Psychology*, 90, 586-600.

Hull, J., G. (1987). Self-awareness model. In H. T. Blane & K. E. Leonard (Eds.), *Psychological theories of drinking and alcoholism* (pp. 272-304). New York: Guilford Press.

Hull, J. G., & Bond, C. F. (1986). Social and behavioral consequences of alcohol consumption and expectancy: A meta-analysis. *Psychological Bulletin*, 99, 347-360.

Ickes, W. (1984). Frequency of positive affect displayed by whites engaging blacks vs. other whites. *Journal of Personality and Social Psychology*, 47, 330-341.

Keltner, D. (1995). Signs of appeasement: Evidence for the distinct displays of embarrassment, amusement, and shame. *Journal of Personality and Social Psychology*, 68, 441-454.

Keltner, D. (1997). The forms and functions of embarrassment. In Ekman, P. & Rosenberg, E. (Eds), *What the Face Reveals,* (pp. 158-160). Oxford University Press, New York.

Kenny, D. A., & Judd, C. M. (1986). Consequences of violating the independence assumption in analysis of variance. *Psychological Bulletin*, 99, 422-431.

Kenny, D. A., Kashy, D. A., Cook, W. L., & Simpson, J. A. (2006). *Dyadic Data Analysis*. New York: Guilford Press.

Kenny, D. A., Mannetti, L., Pierro, A., Livi, S., & Kashy, D. A. (2002). The statistical analysis of data from small groups. *Journal of Personality and Social Psychology*, 83, 126–137.

Kunda, Z., Davies, P. G., Adams, B. D., & Spencer, S. J. (2002). The dynamic time course or stereotype activation: Activation, dissipation, and resurrection. *Journal of Personality and Social Psychology*, 82, 283-299.

Lang, A. R., Goeckner, D. J., Adesso, V. J., & Marlatt, G. A. (1975). Effects of alcohol on aggression in male social drinkers. *Journal of Abnormal Psychology*, 84, 508-518.

LaPiere, R. T. (1934). Attitudes vs. actions. *Social Forces.* 13, 230-237.

Leary, M. R,, & Schreindorfer, L. S. (1998). The prejudicetization of HIV and AIDS: Rubbing salt in the wound. In V. Derlega & A. Barbee (Eds.), *HIV infection and social Interaction* (pp. 12-29). Thousand Oaks, CA: Sage.

MacAndrew, C., & Edgerton, R. B. (1969). *Drunken comportment: A social explanation.* Chicago: Aldine.

MacDonald, T. K., Fong, G. T., Zanna, M. P., & Martineau, A. M. (2000). Alcohol Myopia and condom use: Can alcohol intoxication be associated with more prudent behavior? *Journal of Personality and Social Psychology*, 78, 605-19.

Marlatt, G. A.. & Rohsenow, D. J. (1980). Cognitive processes in alcohol use: Expectancy and the balanced placebo design. In N. K. Mello (Ed.), *Advances in Substance Abuse: Behavioral and Biological Research* (Vol. 1. pp. 159-199). Greenwich, CT: JAI Press.

McConahay, J. B. (1983). Modern racial discrimination and modern discrimination: The effects of race, racial attitudes, and context on simulated hiring decisions. *Personality & Social Psychology Bulletin*, 9, 551-558.

Messner, S. F., McHugh, S., & Felson, R. B. (2004). Distinctive characteristics of assaults motivated by bias. *Criminology*, 42, 585-618.

Miller, C. T, Rothblum, E. D., Felicio, D. M., & Brand, P. A. (1995). Compensating for prejudice: Obese and nonobese women's reactions to being visible. *Personality and Social Psychology Bulletin,* 21, 1093-1106.

Monteith, M. J. (1993). Self-regulation of prejudiced responses: Implications for progress in prejudice-reduction efforts. *Journal of Personality and Social Psychology*, 65, 469-485.

Morris, A. B. & Albery, I. P. (2001). Alcohol consumption and HIV risk behaviors: Integrating the theories of Alcohol Myopia and outcome-expectancies. *Addiction Research and Theory*, 9, 73-86.

Nelson, T. D. (2002). *The Psychology of Prejudice.* Boston, MA: Allyn and Bacon.

Noldus Information Technology (2003). The Observer: Professional System for Collection, Analysis, and Presentation of Observational Data (Version 5.0). Wageningen, The Netherlands.

Norris, J., Davis, K. C., George, W. H., Martell, J., & Heiman, J. R. (2002). Alcohol's direct and indirect effects on men's self-reported sexual aggression likelihood. *Journal of Studies on Alcohol*, 63, 688-695.

Pettigrew, T. F. (1988). The nature of modern racial discrimination. Paper presented at the annual meeting of the Society of Experimental Social Psychology, Madison, WI.

Plant, E. A., & Devine, P. G. (2003). The antecedents and implications of interracial anxiety. *Personality and Social Psychology Bulletin*, 29, 790-801.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical Linear Models*. Newbury Park, CA: Sage.

Reeves, S. B. & Nagoshi, C. T. (1993). Effects of alcohol administration on the disinhibition of racial prejudice. *Alcoholism Clinical and Experimental Research*, 17, 1066-1071.

Richeson, J. A., Baird, A. A., Gordon, H. L., Heatherton, T. F., Wyland, C. L., Trawalter, S., & Shelton, J. N. (2003). An fMRI investigation of the impact of interracial contact on executive function. *Nature Neuroscience*, 6, 1323–1328.

Richeson, J. A., & Shelton, J. N. (2005). Thin slices of racial bias. *Journal of Nonverbal Behavior*, 29, 75-86.

Rogers, R. W., & Prentice-Dunn, S. (1981). Deindividuation and anger-mediated interracial aggression: Unmasking regressive racial discrimination. *Journal of Personality and Social Psychology*. 41. 63-73.

Roizen, J. (1997). Epidemiological issues in alcohol-related violence. In M. Galanter (ed.), *Recent developments in alcoholism* (Vol. 13. pp. 7-40). New York: Plenum Press.

Rohsenow, D. J. & Marlatt, G. A. (1981). The balanced placebo design: Methodological considerations. *Addictive Behaviors*, 6, 107-122.

Sayette, M. A. (1993a). An appraisal-disruption model of alcohol's effects on stress responses in social drinkers. *Psychological Bulletin*, 114, 459-476.

Sayette, M. A. (1993b). Heart rate as an index of stress response in alcohol administration research: A critical review. *Alcoholism: Clinical and Experimental Research*, 17, 802-809.

Sayette, M. A., Martin, C. S., & Perrott, M. A. (2001). The effects of assessment frequency on subjective intoxication ratings following alcohol consumption. *Alcoholism: Clinical and Experimental Research*, 25, 844-846.

Schlauch, R. C., Lang, A. R., Plant, E. A., Christensen, R., & Donohue, K. F. (2009). Effect of alcohol on race-biased responding: The moderating role of internal and external motivations to respond without prejudice. *Journal of Studies of Alcohol and Drug*s, 70, 328-36.

Sears, D. O. (1988). Symbolic racial discrimination. In P. A. Katz & D. A. Taylor (Eds.), *Eliminating racial discrimination: Profiles in controversy* (pp. 53-84). New York: Plenum Press.

Shelton, J. N. (2003). Interpersonal concerns in social encounters between majority and minority group members. *Group Processes and Intergroup Relations*, 6, 171-185.

Shelton, J. N., & Richeson, J. A. (2006). Interracial interactions: A relational approach. *Advances in Experimental Social Psychology*, 38, 121–181.

Sidanius, J. (1993). The interface between racism and sexism. *Journal of Psychology*, 127, 311-322.

Soussignan, R., & Schaal, B (1996). Children's facial responsiveness to odors: Influences of hedonic valence of odor, gender, age, and social presence. *Developmental Psychology*, 32, 367–379.

Steele, C. M., Josephs, R. A. (1990). Alcohol Myopia. Its prized and dangerous effects. *American Psychologis*t, 45, 921-33.

Stephan, W. G., & Stephan, C. W. (2000). An integrated threat theory of prejudice. In S. Oskamp (Ed.), *Reducing prejudice and discrimination* (pp. 23-45). Mahwah, NJ: Lawrence Erlbaum.

Taylor, K. (2007). Disgust is a factor in extreme prejudice. *British Journal of Social Psychology*, 46, 597-617.

Taylor, S. E., Klein, L. C, Lewis, B. P., & Gruenewald, R. A. (2000). The female stress response: Tend and befriend not fight or flight. *Psychological Review*, 107, 411-429.

Vorauer, J., & Kumhyr, S. (2001). Is this about you or me? Self- versus other-directed judgments and feelings in response to intergroup interaction. *Personality and Social Psychology Bulletin*, 27, 706-719.

Vorauer, 1. D . & Turpie, C. (2004). Disruptive effects of vigilance on dominant group members' treatment of outgroup members: Choking versus shining under pressure. *Journal of Personality and Social Psychology*, 27, 706-709.

Wolf, C. (2005). Bureau of Justice Statistics, Special Report – Hate Crime Reported by Victims and Police.

Word, C. O., Zanna, M. P., & Cooper, J. (1974). The nonverbal mediation of self-fulfilling prophecies in interracial interaction. *Journal of Experimental Social Psychology*, 10, 109-120.