SMILING BEHAVIORS AND CREDIBILITY IN ACTUAL TRIALS:

A NATURALISTIC OBSERVATION OF WITNESSES

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ABSTRACT

Nonverbal behaviors, like smiling, occur during witness testimony in trials. Although it has been acknowledged that witnesses exhibit smiling behaviors, there has been no research examining the subsequent effect of smiling on witness credibility. This study used naturalistic observation to examine smiling behaviors and credibility in actual witnesses testifying in court. Results are examined through quantitative analyses and qualitative descriptions. Raters assessed the smiling behaviors and credibility of 32 male and female witnesses testifying in trials of the Tuscaloosa County Courthouse. "Credibility raters" rated the perceived likeability, trustworthiness, confidence, knowledge, and overall credibility of the witnesses using the *Witness Credibility Scale* (*WCS*; Brodsky et al., 2010). "Smile raters" noted smiling frequency and types, including Duchenne (genuine smiles), non-Duchenne (false smiles), speaking/expressive, and listening/receptive smiles. No significant differences were found in the smiling frequency or types for male and female witnesses. All types of smiles besides non-Duchenne were found to contribute to perceived likeability of a witness. Gender was found to affect perceived trustworthiness ratings, in which male witnesses were seen as more trustworthy than female witnesses. Exploratory analyses found significant differences for race, in that African-American witnesses were perceived as less trustworthy, less knowledgeable, and less credible overall than Caucasian witnesses. Other exploratory analyses found that law enforcement witnesses were perceived as more trustworthy, more confidence, more knowledgeable, and more credible overall than other witnesses.

LIST OF ABBREVIATIONS AND SYMBOLS

ANOVA	Analysis of Variance
F	Fisher's *F* Ratio
K	Cohen's Kappa coefficient
M	Mean
N	Number of subjects
p.	Page number
rs	Spearman's correlation
SD	Standard deviation
U	U statistic
z	Standardized residual
<	Less than
=	Equal to

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CONTENTS

LIST OF TABLES

1. Introduction

Nonverbal communication is an important aspect of human personality and behavior. Without speaking, people may communicate their identity, attitudes, feelings, and impressions to others with nonverbal signals (Remland, 1993). Others observe this behavior and make personality attributions about an individual (Ekman, 1989; Heider, 1994; Remland, 1993; Richmond & McCroskey, 2000). Individuals may also use nonverbal signals to stereotype others, facilitate conversation, influence others, or engage in deceptive behaviors (Remland, 1993). Nonverbal modalities include body movements, the sound of language, proximity of speaker and listener, and use of artifacts like clothing and cosmetics (Duncan, 1969). People send messages nonverbally through these modalities in gestures, postures, emotional displays, facial expressions, voice quality, and external appearance (Duncan, 1969). It has been argued that nonverbal cues are more important than verbal cues when communicating messages (Boccaccini, 2002).

Although widely known that nonverbal messages are important in most communication, little research has examined and analyzed their influences during legal proceedings (Remland, 1993). Nonverbal communication relates directly to subjects in the courtroom who are being observed and judged by juries (LeVan, 1984; Remland, 1993). Witness testimony can make the difference between a case that is won or lost (LeVan, 1984). Jury members should focus solely on the content of the testimony; however, it is natural to attend to witnesses' nonverbal behaviors during testimony (LeVan, 1984; Remland, 1993). Jurors actively assess persuasive cues like

nonverbal behaviors that are irrelevant to the actual issue and content of the testimony (Petty & Cacioppo, 1986).

Research has shown that jurors have a tendency to attend to source-mediated impressions rather than content-mediated impressions (Chaiken, 1980). The Elaboration Likelihood Model (ELM) provides a framework for conceptualizing the two different methods of processing of persuasive communication (Petty & Cacioppo, 1986). While jurors should use central processing to analyze and judge testimony, it may be that jurors actually use the less effortful peripheral processing to do so (Brodsky, Griffin, & Cramer, 2010; Chaiken, 1980; Chaiken & Maheswaran, 1994; Heesacker, Petty, & Cacioppo, 1983; Cooper, et al., 1996; Petty & Cacioppo, 1986). Rather than using effortful cognitive thought to process testimony, ELM suggests that jurors often rely on simple cues such as attractiveness, believability, age, ethnicity, gender, and number of arguments (Brodsky et al., 2010). Focusing on factors other than testimony content is more likely especially when the testimony is complex (Cooper, Bennett, & Sukel, 1996). We seek to study the degree to which nonverbal cues have a significant influence witness testimony believability and subsequent persuasiveness.

Much of nonverbal communication is facilitated through facial expressions. Because the design of a typical witness stand primarily features the witness' upper body, jurors may attend closely to the witness' face, which is the most important channel of nonverbal communication (LeVan, 1984). Ekman and Friesen (1969) propose the face as the primary source of identifying nonverbal deception. Moreover, Ekman (2004) has identified the face as one of the most easily and readily observed indicators of emotional expressions. Emotions revealed by facial expressions can be differentiated by levels of intensity and/or masked by another affect, such as fear or sadness (Ekman & Friesen, 1969). It is beneficial to consider various facial expressions

that may be conveyed in a courtroom context when designing a study to investigate these nonverbal communications.

Types of Smiles

Duchenne and Non-Duchenne Smiles. Smiling is a frequently used facial expression that can indicate different affective states (Ekman & Friesen, 1969). Although people have the capacity to implicitly understand when a person is smiling, researchers find it difficult to define smile types because their characteristics vary across individuals (Lau, 1982). Some researchers classify smiles based on teeth visibility and the upward angle of the corners of the mouth (Dodd, Russell, & Jenkins, 1999; Frank, 2002; LaFrance & Carmen, 1980). By observing the activity of muscles surrounding the eyes, observers may perceive a particular emotional component to a smile (Ekman & Friesen, 1982). Such observations may make the difference in distinguishing between a "Duchenne" (Ekman, 1989, Chapter 6) or "felt" smile (Ekman & Friesen, 1982, p. 242) and a non-Duchenne or "false" or "masking" smile (Ekman & Friesen, 1982, p. 244).

However, some facial expressions that are not representative of smiling behaviors may show teeth and/or curved mouths with non-Duchenne smiles. Recent studies have indicated that by exerting particular control of the lower face, people have an ability to activate voluntarily certain emotional expressions (Gosselin, Perron, & Beaupre, 2010). While a Duchenne smile uses the muscles of the lips and the eyes, a non-Duchenne smile has no eye muscle activity (Ekman, 1989; Ekman, Friesen, & O'Sullivan, 1988; Ekman, Davidson, & Friesen, 1990, p. 240). Because Duchenne smiling normally accompanies positive affect and emotions, it may be less likely that Duchenne or genuinely felt smiles will be observed during trials due to the pressures of being in a courtroom setting.

Smiling in a Courtroom Context

Smiling behaviors may be categorized as occurring during speaking/expressive or listening/receptive states (Duncan, 1972; Harrigan, 1985; Miller, Lechner, & Rugs, 1985). Speaking/expressive states include when witnesses answer questions and claim the speaking role. Listening/receptive states include listener cues, such as smiling, which verify the listener's attention to the speaker (Duncan, 1972; Harrigan, 1985; Miller, Lechner, & Rugs, 1985). Harrigan's (1985) study noted a higher percentage of listener cues during listening/receptive states, although the exact amount of smiling was not specified. Because smiles are commonly used to confirm listener attention, it may be that smiling behaviors will be used more frequently during listening/receptive states in the courtroom. Smiling during speaking/expressive states may be absent during testimony due to the courtroom setting.

Facial expressions, including smiling, are governed by display rules including social context, culture, roles, and status (Ekman & Friesen, 1969). A large proportion of the smiling literature has examined smiling behaviors in a controlled environment, usually involving deception or social interaction. During courtroom trials, the context is never simulated and it is unlikely that there will be emotions similar to those felt during social interaction. It would be difficult to simulate the situational context of the courtroom, pressures and stresses about testifying, and overall experience of the trial. Witnesses feel pressured and scrutinized in the courtroom, and witnesses usually testify on details of cases several years in the past, which may be demanding to recall. The stress of performing well during testimony may increase or decrease nonverbal actions, including smiling behaviors.

In a courtroom setting, Duchenne smiling may be less frequent given the degree of seriousness associated with trial proceedings, although witnesses are encouraged to show

happiness when sincere (Boccaccini, 2002; Brodsky, 2004; 2009; 2010). However, decreased positive content during trials and the potential infrequency of Duchenne smiling does not mean that smiling behaviors do not occur. Smiling behaviors can indicate a variety of different affective displays besides positive emotions, including fear or nervousness (Ekman & Friesen, 1969). The intensity of the situation, scrutiny by the jury, and cross-examinations may make witnesses genuinely emotional in court (Brodsky, 2004; 2009). They may experience fear and nervousness about perceived knowledge, potential embarrassment, and humiliation, and use smiling behaviors to compensate (Brodsky, 2004; 2009; LeVan, 1984). Witnesses may also strive to avoid appearing detached, resulting in exaggerated emotional displays (Brodsky, 2004). The current study considered emotions and stressors of the courtroom context in differentiating Duchenne smiling behaviors from non-Duchenne smiling behaviors.

Types of Witnesses

The types of witness should also be considered when exploring smiling behaviors in the courtroom. Previous research examining smiling, emotions, and deception are not be completely relevant because of the roles of witnesses. Witnesses include victims of crime, eyewitnesses, expert witnesses, defendants, law enforcement witnesses, etc. (Brodsky, 2004). The current study opportunistically observed witnesses and analyzed data accordingly, and also examined law enforcement witnesses testifying in court. Existing literature has minimally investigated the role and impact of law enforcement witnesses testifying in court. Law enforcement officers include state, local, and federal positions (Bureau of Labor Statistics, 2011). Law enforcement witnesses are highly involved in criminal cases, and are called frequently to testify about evidence and procedures (Bureau of Labor Statistics, 2011).

Smiling and Gender

As a product of gender role socialization, women tend to exhibit more smiling behaviors than men (Briton & Hall, 1995; Dodd, et al. 1999; Henley, 2002; Hess & Bourgeois, 2010; LaFrance & Carmen, 1980; LaFrance & Hecht, 1995; LaFrance, Hecht, & Levy Paluck, 2003; Woodzicka, 2008). In addition, not only do observers believe and expect women smile more than men, but women actually do smile more frequently than men (Briton & Hall, 1995) and expect women to smile more (Guerrero, Jones, & Boburka, 2006). Research examining yearbook photographs supports the gender difference in smiling, as well as the trend for this differential to persist over decades despite evolving gender roles (Dodd, et al., 1999).

The difference in smiling may be due to the segregation of children's playmates by gender, which is a widespread phenomenon across cultures (Maccoby, 1990). While boys play rough in competitive and dominant styles, girls participate in more agreement-oriented tasks (Maccoby, 1990). Not only are children segregated, but they are also taught how to behave through modeling and reinforcement in their homes and society (Guerrero, Jones, & Boburka, 2006). Girls are encouraged throughout their development to be more socially oriented than boys, as well as to express emotions and positive affect (Guerrero, et al., 2006). A woman's failure to smile may be associated with negativity, and may be assumed to be caused by unfriendliness or moodiness (Guerrero, et al., 2006). However, men are not expected to smile to represent positive emotions, and their expressions have no bearing on perceptions of friendliness or warmth (Tucker & Friedman, 1993).

Status Theory. Perhaps it is gender-based expectations that cause smiling to be classified as a feminine behavior, and the reason why those who smile are perceived as less masculine (LaFrance & Carmen, 1980; Reis, et al., 1990). The idea of smiling as a feminine

rather than masculine behavior may have arisen due to gender incongruities in status. Henley (1977) has suggested that the gender differences in smiling may be a reflection of a power imbalance in society, in which men possess higher status than women. This theory of status argues that feelings of inferiority and subordinance channel the need to please others, which may be accomplished by increasing smiling behaviors (Hall, 2006). If women are indeed subordinate and inferior, it may be that the gender difference in smiling is an attempt to compensate for lower status.

Courtroom Implications. The courtroom context may have additional implications in smiling behaviors between male and female witnesses. Several studies have found that the smiling difference between genders emerges especially in situations in which people are aware they are being observed (Hall, 1984; LaFrance, et al. 2003; Hall, et al., 2006). Smiling male witnesses may lose credibility because men are not expected to smile and may violate their gender role by doing so. Jurors may perceive smiling behaviors in female witnesses as more acceptable than in male witnesses. Reysen (2006) found that women in general were rated as more likeable than men regardless of smiling or laughing condition. This gender difference in smiling may affect credibility ratings, in leading to more positive responses towards smiling female witnesses and harsher criticisms of smiling male witnesses. The concepts of both gender and situational context will be important to consider when observing smiling behaviors by either sex in the courtroom.

Smiling and Credibility

For witnesses, exhibiting smiling behaviors may influence perceived credibility, which may be assessed by using the *Witness Credibility Scale* (*WCS*; Brodsky, et al., 2010). The WCS is typically used in studies examining expert witnesses, though the current study will use it

especially for ratings of lay witnesses. This scale evaluates overall credibility, as well as the four facets that have been empirically associated with witness credibility: Likeability, confidence, trustworthiness, and knowledge (Brodsky, et al., 2010). If smiling behaviors influence observer evaluation of likeability, confidence, trustworthiness, and knowledge, then it is likely that they may have an impact on perceived credibility. The WCS has been used with studies examining other nonverbal aspects, such as eye-gaze (Neal & Brodsky, 2008), but has not been used in any studies considering smiling in the courtroom. This study will employ the WCS as an empirically established measure to assist in exploring whether or not smiling behaviors influence credibility in the courtroom.

Likeability and Trustworthiness. Moderate levels of smiling behaviors have been used in conjunction with other criteria to measure likeability, which was found to have a direct relation with trustworthiness (Brodsky, Neal, Cramer, & Ziemke, 2009). Research has linked smiling to likeability, attractiveness, trustworthiness, and a positive "halo effect," which leads to associating that person with goodness and a constructive evaluation (Darby & Jeffers, 1988; Lau, 1982; Remland, 1993; Reysen, 2006; Zaidel, Bava, & Reis, 2003). Several studies have found support for the influence of smiling on physical attractiveness, which has been linked to greater likeability (Michelini & Snodgrass, 1980; Mueser, Grau, Sussman, & Rosen, 1984; Reis et al., 1990). In a courtroom setting, attractive defendants are frequently rated as less culpable, found guilty less often, and given more leniency (Darby & Jeffers, 1988; Efran, 1974; McFatter, 1978). In addition, the absence of smiling and physical attractiveness has been associated with higher ratings of culpability and punishment of defendants (Abel and Watters, 2005).

Attractiveness has also been found to be positively related to trustworthiness (Darby & Jeffers, 1988). If smiling leads to attractiveness, which is linked to perceived trustworthiness,

then perhaps smiling predicts perceptions of trustworthiness. One study found that a smiling-affiliative demeanor increased perceived trustworthiness in mock victims expressing complaints (Hareli et al., 2009). Independent of physical attractiveness, smiling persons have also been viewed as better people, which may be explained by perceived trustworthiness (LaFrance & Hecht, 1995; Rubak, 1981). LaFrance & Hecht (1995) found that raters viewed smiling persons as more "trustworthy, good, honest, genuine, obedient, blameless, sincere, and admirable" (p. 213).

Confidence and Knowledge. Substantial evidence of a link between smiling and perceived confidence and knowledge was not found in existing literature. Because nonverbal behaviors are important for opinion formation in the courtroom (Boccaccini, 2002), as well as for peripheral information cues as postulated by the ELM (Petty & Cacioppo, 1986), it may be that smiling has an impact on perceived confidence and knowledge of witnesses.

The Current Study

Although witnesses surely do exhibit smiling behaviors in the courtroom, there has been no research regarding smiling during trials, as well as the impact of smiling on juror perceptions of credibility. Our study is the first to investigate the occurrence and frequency of smiling behaviors of witnesses in legal proceedings. It is also the first to employ naturalistic observation techniques to assess smiling behaviors by testifying witnesses. By observing testimony live, we collected data uncontaminated by simulation and experiment awareness. We believed that it was especially important to collect data on smiling behaviors in the courtroom in order to create a foundation for research in this area. Naturalistic observation was selected because of the lack of information on smiling behaviors in the courtroom. Based on the large literature supporting the socialization of smiling behaviors in a gender-specific fashion, we sought to discover if this

phenomenon would be replicated in witness smiling behaviors. As mentioned, smiling behaviors during trials may be potentially judged on the basis of courtroom and communicative contexts and gender roles.

2. Method

Subjects

Subjects of this study were 32 male and female witnesses who testified in criminal and civil trials at the Tuscaloosa County Courthouse of Tuscaloosa, Alabama. We employed unobtrusive naturalistic observation of witnesses testifying in criminal and civil trials of the four circuit and two district courtrooms. Naturalistic observation occurred on an opportunistic basis as trials proceeded.

Raters

We used four trained raters, with two raters assessing the frequency of different smiling behaviors and two raters assessing the credibility of the witnesses. The smile raters included the principal investigator and another individual, who were both aware of the study's factors and hypotheses. The credibility raters included two other individuals, both blind to the study's factors and hypotheses. The credibility raters were unaware of this information in order to protect them from bias in their assessments. The smile raters and the credibility raters underwent training separately prior to courtroom observations. Our raters included a 24-year-old Asian-American female graduate student, a 23-year-old Caucasian female graduate student, a 23-year-old Caucasian undergraduate student, and a 21-year-old Caucasian female undergraduate student.

Measures

Witness Credibility Scale (WCS). The WCS was used by the credibility raters to assess the effectiveness and believability of the law enforcement witnesses. The WCS is composed of four subscales to represent the four facets of credibility: Likeability, trustworthiness, confidence, and knowledge (Brodsky et al., 2010). Each of these subscales has five items for a total of twenty items on the WCS. These items are formatted in a 10-point Likert-type scale with paired adjectives and antonyms (e.g., *untruthful* to *truthful* and *unreliable* to *reliable*; see Appendix C) (Brodsky et al., 2010). The WCS has been found to be an overall reliable scale ($\alpha = .95$), and each subscale was reliable (Confidence, $\alpha = .89$, Likeability, $\alpha = .86$, Trustworthiness, $\alpha = .93$, Knowledge, $\alpha = .86$) (Brodsky et al., 2010).

S-Rater Witness Information Sheet and C-Rater Witness Information Sheet. The S-Rater Witness Information Sheet was used by the smile raters to record data pertinent to the study. Data gathering included rater name, date, charges against the defendant, side examined by (prosecution or defense), mode of testimony (direct- or cross-examination), witness role, witness gender, witness ethnicity, approximate witness age, and witness attractiveness. The S-Rater Witness Information Sheet also recorded smile type, smile state, and smiling behavior proportions during observed testimony. The C-Rater Witness Information Sheet was used by the credibility raters to record data pertinent to the study. This data sheet was identical to the S-Rater Witness Information Sheet excluding testimony duration and smiling behaviors.

S-Rater or C-Rater Qualitative Observations. The S-Rater or C-Rater Qualitative Observations form allowed raters to make qualitative comments on any aspect of witness testimony. Raters were instructed to write comments that might be relevant and informative.

Procedures

Experiment procedures are summarized in Table 1. For initial training, the smile raters looked at photographs of smiling behaviors, videotapes of witness testimony, and an experiment by the BBC: "Spot The Fake Smile." The BBC experiment displays 20 3-5 second video clips of human faces smiling, and the viewer chooses whether the smile is "genuine" or "fake." The score is displayed at the end with results of accuracy on rating the smiling faces, which assisted in training the smile raters. The raters discussed the appearances of smile types (Duchenne versus non-Duchenne smiles), as well as the occurrence of smiling during speaking/expressive and listening/receptive states. The smile raters used the project data sheets (*S-Rater Witness Information Sheet,* see Appendix A; *S-Rater or C-Rater Qualitative Observations,* see Appendix C), which were the same information sheets used during observation in the courtroom. They assessed the photographs and videos individually by marking the frequency of the different smiling behaviors by smiling type and state, and then reviewed their conclusions in order to establish agreement about smiling behaviors before going to the courtroom to view actual trials. The two credibility raters watched videos of witness testimony and rated the credibility using the prepared data sheets (*C-Rater Witness Information Sheet,* see Appendix B; *S-Rater or C-Rater Qualitative Observations,* see Appendix C). Both the smile raters and the credibility raters did not examine live witness testimony until there was adequate agreement on most of the training activities.

Sufficient agreement was attained in the lab and then in the courtroom. A kappa coefficient of .80 or above was needed to establish good inter-rater reliability between the raters in the courtroom (Gwet, 2010; Ekman, Friesen, & O'Sullivan, 1988). In the laboratory, the smile raters had an overall inter-rater reliability of .94 and the credibility raters had an overall

inter-rater reliability of .79. In the courtroom, the smile raters had an overall inter-rater reliability of .85 and the credibility raters had an overall inter-rater reliability of .96 for approximately 10% of the total sample size.

After good inter-rater reliability was established in the lab and courtroom, the smile raters and credibility raters were able to independently observe witnesses during different trials. Observation commenced immediately upon entering a courtroom with witness testimony; if there was no testimony, the raters went to the next courtroom and trial in sequence. The raters observed until testimony was complete, or until there was a break in testimony. Only witness testimony with a duration of five minutes or longer was included in data for analysis.

3. Results

The primary and exploratory independent variables included gender (coded as male = 1 and female = 2), race (coded as African-American = 1 and Caucasian = 2), and witness role (coded as law enforcement = 1 and other = 2). The descriptives (gender, race, witness role, attractiveness, presence of smiling, and overall credibility) for each subject are presented in Table 1. Means and standard deviations for gender, race, and witness role for smiling behaviors and the WCS are presented in Tables 2 and 3. Mean ranks for gender, race, and the WCS are presented in Table 4. Witness role (other vs. law enforcement) and the WCS are presented in Table 5 and included in analyses for exploratory considerations. The variables encompassing smiling behaviors were found to violate parametric assumptions; therefore, analyses using these variables were conducted with nonparametric tests to account for a zero-inflated distribution. The other variables did not severely violate the parametric assumptions of equal variance, normal distribution, and independence and were not confined to parametric analyses.

A Spearman's rank correlation was used initially to assess the relations between the studied variables, and presented in Tables 6 and 7. There was a negative relation between gender and trustworthiness, $rs = -.38$, $p = .033$. There were positive relation between the rate of Duchenne smiling and likeability, $rs = .39$, $p = .030$, speaking/expressive smiling and likeability, $rs = .40$, $p = .025$, listening/receptive smiling and likeability, $rs = .40$, $p = .025$, and the rate of total smiling behaviors and likeability, $rs = .42$, $p = .018$. There was a positive relation between race and trustworthiness, $rs = .37$, $p = .038$, race and knowledge, $rs = .53$, $p = .002$, and race with

total credibility, *rs* = .44, *p* = .012. Witness role (other witness vs. law enforcement) was found to be negatively correlated with trustworthiness, *rs* = -.49, *p* = .004, negatively correlated with confidence, *rs* = -.48, *p* = .005, negatively correlated with knowledge, *rs* = -.43, *p* = .015, and negatively correlated with overall credibility, *rs* = -.50, *p* = .004.

A one-way analysis of variance (ANOVA) test was also used to assess the effect of witness role (law enforcement vs. other) on the WCS components and total score. Significant effects of witness role were found for all dependent variables except likeability. There was a significant effect of witness role for trustworthiness, $F(1,30) = 7.71$, $p = .009$, for confidence, $F(1,30) = 9.10$, $p = .005$, for knowledge, $F(1,30) = 5.73$, $p = .023$, and for overall credibility, $F(1,30) = 9.35$, $p = .005$. The data suggest that law enforcement witnesses were perceived as more trustworthy, confident, knowledgeable, and overall more credible than other witnesses (see Table 3 for means and standard deviations).

Additional analyses were conducted to explore race and credibility. Individual Mann-Whitney U tests were used to assess the effect of race on the WCS components and total score. While there was no effect for race on likeability and confidence, there was a significant difference between African-American and Caucasian witnesses on trustworthiness, $U = 64.00$, $p = .042$, on knowledge, $U = 41.00$, $p = .002$, and on overall credibility, $U = 54.00$, $p = .013$. The mean ranks for Caucasian witnesses were higher than those for African-American witnesses, suggesting that Caucasian witnesses were perceived as more trustworthy, knowledgeable, and overall more credible than African-American witnesses.

Nonparametric analyses were conducted with individual Mann-Whitney U Tests to assess the effect of gender on the WCS facets and total score. There was no effect for gender on the WCS components of likeability, confidence, knowledge, or overall credibility; however, there

was a significant difference between male and female witnesses on trustworthiness, $U = 58.50$, $p = .035$. The mean rank for male witnesses was higher than that of female witnesses, which suggests that male witnesses were perceived as more trustworthy than female witnesses.

Table 1

Subject Data for Gender, Race, Witness Role, Attractiveness, Presence of Smiling Behaviors, and Overall Credibility as measured by the WCS

ID	Gender	Race	Witness Role	Attractiveness	Smiling Present?	Total Credibility
1	Female	Caucasian	Other	5.5	Yes	118
2	Male	Caucasian	Law Enforcement	6.5	None	149
3	Male	Caucasian	Law Enforcement	5.0	Yes	145
4	Male	African-American	Other	6.5	Yes	113
5	Male	Caucasian	Other	7.0	Yes	158
6	Male	Caucasian	Other	2.5	Yes	135
7	Male	Caucasian	Law Enforcement	4.5	None	145
8	Male	African-American	Law Enforcement	3.0	Yes	140
9	Male	Caucasian	Law Enforcement	6.0	Yes	142
10	Male	Caucasian	Other	4.5	Yes	140
11	Male	African-American	Other	4.0	Yes	86
12	Male	Caucasian	Law Enforcement	4.0	Yes	136
13	Male	African-American	Law Enforcement	5.0	Yes	142
14	Male	Caucasian	Law Enforcement	5.5	Yes	98
15	Male	African-American	Other	4.5	None	133
16	Female	Caucasian	Other	8.0	Yes	148
17	Male	African-American	Law Enforcement	5.5	None	142
18	Male	Caucasian	Law Enforcement	5.5	Yes	154
19	Male	African-American	Other	2.5	Yes	117
20	Female	African-American	Other	6.0	Yes	129
21	Female	African-American	Other	4.5	None	110
22	Male	Caucasian	Law Enforcement	3.0	Yes	156
23	Male	Caucasian	Law Enforcement	6.0	Yes	149
24	Male	Caucasian	Law Enforcement	6.0	Yes	150
25	Female	African-American	Other	5.5	None	115
26	Female	African-American	Other	6.5	Yes	132
27	Female	Caucasian	Other	4.5	Yes	156
28	Female	Caucasian	Other	6.5	None	102
29	Female	Caucasian	Law Enforcement	7.0	Yes	147
30	Male	Caucasian	Other	7.0	None	113
31	Male	Caucasian	Law Enforcement	6.5	None	143
32	Female	Caucasian	Other	5.0	Yes	102

Table 2

Means for Gender, Race, and Witness Role for Rates of Smiling Behaviors per Minute

	Duchenne	Non-Duchenne	Speaking Expressive	Listening Receptive	Total Smiling
Gender					
Male N = 22	.19	.15	.18	.17	.33
Female N = 10	.32	.14	.27	.22	.51
Race					
Caucasian N = 21	.25	.16	.22	.21	.43
African-American N = 11	.20	.13	.18	.14	.29
Witness Role					
Law Enforcement N = 15	.07	.10	.10	.11	.20
Other N = 17	.37	.19	.31	.25	.54

Table 3

Means for Gender, Race, Witness Role on the WCS

	Likeability	Trustworthiness	Confidence	Knowledge	Total Credibility
Gender					
Male N = 22	33.77	37.14	34.27	30.55	135.73
Female N = 10	31.90	33.50	32.40	28.10	125.90
Race					
Caucasian N = 21	34.10	36.81	34.57	31.95	137.43
African-American N = 11	31.45	34.45	32.00	25.64	123.55
Witness Role					
Law Enforcement N = 15	34.73	38.73	36.80	32.27	142.53
Other N = 17	31.82	33.59	30.94	27.59	123.94

Table 4

Mean Ranks of Gender and Race on the WCS using the Mann-Whitney Test

	Likeability	Trustworthiness	Confidence	Knowledge	Total Credibility
Gender					
Male N = 22	17.11	18.84	17.61	17.82	17.98
Female N = 10	15.15	11.35*	14.05	13.60	13.25
Race					
Caucasian N = 21	17.76	18.95*	18.12	20.05**	19.43*
African-American N = 11	14.09	11.82	13.41	9.73	10.91

**Mean rank is significant at the 0.01 level; *Mean rank is significant at the 0.05 level

Table 5

Means (and Standard Deviations) of Witness Role on the WCS

Witness Role	Likeability	Trustworthiness	Confidence	Knowledge	Total Credibility
Law Enforcement N = 15	34.73 (3.65)	38.73 (4.59)	36.80 (4.39)	32.27 (3.84)	142.53 (13.41)
Other N = 17	31.82 (6.44)	33.59 (5.73)	30.94 (6.28)	27.59 (6.64)	123.94 (19.87)

Table 6

Spearman Rank Correlations of the Study Variables

	Gender	Race	Law Enforcement vs. Other	Attractiveness
Smiling Rates				
D smiles/min	.19	.06	.15	-.26
ND smiles/min	.00	.04	.20	.00
SE smiles/min	.13	.01	.21	-.05
LR smiles/min	.20	.11	.23	-.01
Total smiles	.14	.06	.21	-.04
Witness Credibility Scale				
Likeability	-.10	.19	-.23	.15
Trustworthiness	-.38*	.37*	-.49*	.01
Confidence	-.18	.24	-.48**	.14
Knowledge	.21	.53*	-.43*	.14
Total Credibility	-.24	.44*	-.50**	.15

**Correlation is significant at the 0.01 level; *Correlation is significant at the 0.05 level
Gender: Male = 1, Female = 2; Race: African-American = 1, Caucasian = 2; Witness Role: Law Enforcement = 1, Other = 2; Attractiveness on a Likert scale (1 = least attractive, 10 = most attractive)

Table 7

Spearman Rank Correlations of Smiling Behaviors and the WCS

	Likeability	**Trustworthiness**	**Confidence**	**Knowledge**	**Total Credibility**
Smiling Rates					
D smiles/min	.39*	-.13	-.02	-.02	.06
ND smiles/min	.17	.12	.18	.01	.14
SE smiles/min	.40*	-.03	.20	.06	.18
LR smiles/min	.38*	-.01	.06	-.08	.13
Total smiles	.42*	.03	.15	.03	.20

**Correlation is significant at the 0.01 level; *Correlation is significant at the 0.05 level

4. Discussion

The inquisitive and exploratory disposition of this study, along with a methodology utilizing naturalistic observation, provided an opportunity to examine and transcribe findings and experiences in both quantitative and qualitative approaches. The qualitative observations bring substantial meaning to the quantitative statistics presented, as well as insight to the future of this type of research. The study provided an interesting model for research examining nonverbal communication in real witnesses testifying in actual trials. Results from this study presented initial evidence that witnesses do exhibit smiling behaviors while testifying in trials, and demonstrate that they have some effect on subsequent ratings of credibility. In addition, exploratory findings provide information on the effect of witness race and witness role on credibility. We will elaborate on the statistical findings of the study and include qualitative observations that may provide clarification and offer avenues for future research.

Although smiling was present in witness testimony, there were no significant differences in smiling type exhibited (i.e., Duchenne vs. non-Duchenne and speaking/expressive vs. listening/receptive). Contrary to predictions, the courtroom context did not have any effect on the communication states of speaking/expressive or listening/receptive smiling. There appeared to be no dominant occurrence of genuine or false smiling types. Perhaps the variability in courtroom proceedings elicit context-specific communication states and feelings from the witness. All smiling types were positively linked to likeability except non-Duchenne smiling. Our findings support the literature in the direct relation between smiling and perceived likeability

of an individual. Therefore, as rates of Duchenne, speaking/expressive, listening/receptive, and total smiling increased, ratings of perceived likeability increased.

No statistically significant differences in smiling behaviors were found between male and female witnesses. The social psychology literature has repeatedly demonstrated that women smile more than men, which was an expected outcome in this study. However, the lack of difference generates hypotheses when examining the violation of such a powerful social norm. It may be that the context and environment of the courtroom setting eliminates the gender discrepancy in smiling. Identifying with the witness role and accepting the responsibilities to testify in court is an experience distinct from those of everyday social interactions. However, it may be that a larger sample size would elicit more significant differences. Female witnesses had higher rates of smiling than male witnesses on all types and overall except non-Duchenne smiling. Of the nine witnesses who exhibited no smiling behaviors during testimony, six were male and three were female. Our sample may be trending toward significant smiling differences between male and female witnesses, and further research is necessary to confirm this.

Although gender had no impact on rates of smiling behaviors, there was a significant difference in trustworthiness ratings given to male and female witnesses. Male witnesses were seen as more trustworthy than female witnesses, which may be linked to earlier discussions on status theory. We initially thought that women's lower status would affect the rate of smiling behaviors; however, it may be that female witnesses were simply perceived as less suitable for a witness role. It may be difficult to trust and accept women, who are historically subordinate in a role of authority and power. Also, we expected a covariate of attractiveness to influence both smiling and credibility, especially likeability and trustworthiness; however, our data suggested that attractiveness had no significant effect.

Findings related to witness role suggest that being a law enforcement witness may have implications for credibility. Law enforcement witnesses received higher scores on the WCS subscales and total score, and were significantly higher in ratings of perceived trustworthiness, confidence, knowledge, and overall credibility. Although smiling differences were not significant between law enforcement witnesses and other witnesses, there may be different expectations for future research. Law enforcement witnesses exhibited fewer smiling behaviors than other witnesses on all types and overall. It may be that smiling behaviors by law enforcement witnesses have little effect on perceived credibility because they may be possibly seen in a higher status as authority figures.

Our struggles to observe female witnesses lead to inquiries about the actual number of female witnesses testifying in court, especially as law enforcement officers. Law enforcement witnesses comprised nearly half of our sample; however, there was only one female law enforcement witness. If we had an equal sample of male and female law enforcement witnesses, our findings regarding credibility might be altered. Male witnesses, regardless of affiliation with the law enforcement occupation, were seen as more trustworthy than female witnesses (our only statistically significant result of gender and the WCS). If confirmed in further research, this pattern may put female law enforcement witnesses at a particular disadvantage. In addition, only three of the law enforcement witnesses were African-American. Thus our findings of increased credibility for law enforcement witnesses may actually only generalize to Caucasian male law enforcement witnesses. These findings may indicate that residual effects from our unconscious acceptance of Caucasian-dominated patriarchal organization, as seen in status theory, influence perceived witness credibility.

Exploratory findings indicated a discrepancy in credibility ratings related to the race of witnesses testifying in trials. African-American witnesses were perceived as less trustworthy, confident, and less credible overall than Caucasian witnesses. The issue of perceived credibility and witness race is limited in the literature. These findings contradict previous studies on witness race that found no difference in credibility ratings and higher credibility for African-American witnesses (Abshire & Bornstein, 2003; Miyatake, 1999; Tetterton, 2007). More research is needed to investigate if there is in fact a difference in credibility ratings as a result of race, as well as if there is a difference between naturalistic ratings of actual witness testimony in trials versus transcribed or videotaped testimony in a laboratory setting. In addition, we had one Asian-American rater and three Caucasian raters, who were all female. The limited demographic heterogeneity may have impacted our findings because of a lack of male and/or African-American raters. It may be that smiling behaviors had a subtle effect on perceived credibility with regard to race. Although there were no significant differences in smiling, African-American witnesses exhibited less smiling behaviors on all types and overall than Caucasian witnesses.

It is important to consider that this is the first study to use the WCS in measuring the credibility of lay witnesses as well as expert witnesses. The studies previously mentioned that examined race and credibility were all conducted with expert witness testimony, and Tetterton's (2007) study was the only to use the WCS. In our sample, our witnesses included defendants, co-defendants, victims, fact witnesses, law enforcement, and others in addition to expert witnesses. Previous findings with regard to race and credibility may be irrelevant when examining lay witness testimony. Because of the prevalence of lay witness testimony in court,

there is a need for further research in examining the credibility of lay witnesses in addition to expert witnesses.

Qualitative Observations

We chose to use naturalistic observation for my thesis study because we were determined to examine the presence of nonverbal communication in the courtroom, specifically smiling behaviors. Prior to this study, we had never stepped foot into a courtroom. We were unaware of typical court proceedings, such as jury selection, opening statements, witness testimony, cross examination, etc. We did not feel like researchers; instead, we felt like subjects in a reality that continued progressing with or without our presence. The usual power differential between researcher and subject was reversed and we were stripped of control, a strength that most researchers depend on in a research study. However, we embraced the authenticity of the imprecise workings of the court system and its players, and we believe that this experience has helped us advance as researchers.

The sporadic nature of the court system and outside factors caused data collection to be effortful and overwhelming. Throughout the data gathering stage, we received valuable trial information from an assistant district attorney, who told us as much as he could about the specific days, times, potential witness testimony, assigned judge/attorney, and the case. Our project was proposed in February 2011, we attained approval from the Institutional Review Board (IRB) in March 2011, and we prepared for data collection for the first week of May 2011. However, on April 27, 2011, a horrific and violent tornado swept through Tuscaloosa, halting all services except those of emergency care and assistance. All scheduled trials for late spring and summer were suspended indefinitely, and we were unable to commence data collection until late July 2011.

There were two trial weeks in the summer, and in the fall semester the courts held trials every other week. we felt that this was promising, but it was exceedingly difficult to schedule observation times with my raters, in addition to an intense semester of class, therapy clients, an external placement, and a teaching assistantship. Again, the lack of control and planning when observing trials impeded our efforts. At times we would arrive when they were still in the process of jury selection, a planned witness would fail to attend, or when witness testimony was already completed. Trials often settled outside of court, and trials in the district courtrooms were especially timely because they had to transport prisoners. Though we spent 2-3 days every trial week, it was exceedingly difficult to attain the ideal circumstance which provided us with data.

At the beginning of data collection, we were hesitant to shift courtrooms and disturb trials. We soon realized this was a common occurrence with family members, friends, law student and criminal justice observers, and employees of the courthouse. If we finished observing all witnesses in one courtroom, we gathered up our materials and entered into another courtroom with potential witnesses. Witness testimony could last from 2 minutes to 1 ½ hours, simply in direct examination. We were fortunate to have an idea of where and when to go because of the information we received from the assistant district attorney, but even he could not predict exact occurrences. On a typical day, it was easy to spend several long hours observing trials. And on a good many days, we left the courthouse empty-handed.

However, this study provided many qualitative observations that would otherwise be absent. The information provided in this study allows readers and researchers to imagine our struggles, but also visualize the mechanisms of this study and the court system. It is important to note that the courtroom context is never standardized, and is affected by the judge, attorneys, jury, case, and witnesses.

Our observations noted when a witness smiled and appeared "happy and friendly." Some witnesses used positive affect to respond appropriately to jokes made by the attorney or judge. For instance, a juror's cell phone rang twice during a witness's testimony, and the judge joked that "someone must be REALLY trying to reach you," to which most of the courtroom smiled and laughed. Another time, the judge gave a handful of peppermints out before he was to meet privately with the attorneys; the jury and witness were visibly pleased by his pleasant offerings. As small interactions like this occur throughout testimony, witnesses are still scrutinized at all times on the stand, even when they are not engaging in testimony.

In our analyses, witness gender was affected by the few female witnesses observed. We observed on an opportunistic basis, which meant that we had no control over the type of trial, nor did we know what witnesses would be testifying. Our assistant district attorney friend made great efforts to ask colleagues if their trials included female witnesses. Even with this information, there was still an overall lack of female witness testimony. After collecting data for over six months, we only observed 10 female witnesses, compared to 22 male witnesses. We failed to collect even sample sizes based on gender; yet, the data in this study mirror what is encountered in actual trials.

The exploratory nature of the findings regarding law enforcement witnesses provides no solid evidence to support why these findings exist. It may be that law enforcement witnesses are perceived as higher in status, authority and power; therefore, they may be seen as more credible witnesses. It may be our response to authoritative figures, regarding them as higher in status, which led to higher credibility ratings. Looking back through our narrative comments, it was noted that law enforcement witnesses were either dressed in uniform or wearing professional attire. In addition to their commanding appearance, their role was explicitly mentioned as

"sergeant of the homicide unit" or "in the department of corrections." More information is needed to determine what factor exactly creates a perception of increased credibility in law enforcement witnesses.

There were some limitations in the small sample size, uneven sample sizes of variables (i.e., gender, race), and nonparametric properties of variables (i.e., rates of smiling behaviors), that led to a lack of power supporting the analyses. Although the statistical power is lacking, the unobtrusive and natural quality of the data was not manipulated. The innovative elements of this study give substantial meaning to the results. The study was the first to employ naturalistic observation to investigate the presence of smiling behaviors in witness testimony and their subsequent effects on perceived witness credibility. The quantitative, qualitative, and exploratory findings of this study provide opportunities for future research.

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Appendices

Appendix A

Experiment Procedures

	Procedure		Procedure Details
Stage 1	Training in the Laboratory	Smile Raters	▪ Laboratory training materials: photographs, videotapes of witness testimony, and the BBC's "Spot The Fake Smile" experiment online ▪ Training objectives: familiarize with the prepared data sheets, recognize smile types and communication modes, attain agreement during observations
		Credibility Raters	▪ Laboratory training materials: videotapes of witness testimony ▪ Training objective: familiarize with the prepared data sheets while watching witness testimony
Stage 2	Inter-Rater Reliability in the Courtroom	Smile Raters and Credibility Raters	▪ Observe live witness testimony for 10% of sample ▪ Must ensure good courtroom inter-rater reliability of at least .80 ▪ Good inter-rater reliability will allow raters to observe witness testimony independently
Stage 3	Data Collection:	Raters	▪ If sufficient inter-rater reliability has been established, there will only need to be 1 smile rater and 1 credibility rater ▪ Raters will observe witnesses independently and simultaneously: 1 smile rater and 2 credibility raters sitting separately in the courtroom
		Trial Information	▪ The study will obtain trial dates, times, and locations from the courthouse, as these materials are available to the public ▪ Raters will observe witness testimony only
		Witnesses	▪ Raters will observe all witnesses ▪ Witnesses will be observed on an opportunistic basis
		Courtrooms	▪ Four circuit courtrooms: 2nd floor North and South and 3rd floor North and South ▪ Two district courtrooms: 6th floor East and West
		Observation Plan	▪ 2 raters (1 smile rater and 1 credibility rater) will go to the courthouse on Monday-Friday of trial weeks, when scheduling permits ▪ Raters will immediately begin observing features of witness testimony and stay in a courtroom until the witness finishes testifying or there is a break during the trial. If a courtroom has no witnesses, the raters will visit the next courtroom in the sequence

Appendix B

S-Rater Witness Information Sheet (Page 1)

Name of Rater: _____ **Date:** _____

Charges Against the Defendant: _____

Testimony Start Time: _____ **Testimony End Time:** _____

Testimony Total Time: _____

Examined By: Prosecution Defense

Mode of Testimony: Direct Examination Cross Examination

Witness Role:

Victim Defendant Eyewitness Expert Law Enforcement

Witness Gender:

Male Female

Witness Ethnicity:

African-American Caucasian Hispanic Asian Other

Approximate Witness Age:

19-25 26-35 36-45 46-55 56-65 66-75 75 +

Witness Attractiveness:

1 = Not at All Attractive **5 = Neutral** **10 = Very Attractive**

1-10: _____

S-Rater Witness Information Sheet (Page 2)

Tally Smiling Behaviors:

	Duchenne (D)	**Non-Duchenne (N-D)**	
Speaking/Expressive (S/E)			**Total # S/E**
Listening/Receptive (L/R)			**Total # L/R**
	Total # D	**Total # N-D**	**Total # Smiles**

Total Smiling Behaviors:

S/E / Time = _____ **L/R / Time** = _____

D / Time = _____ **N-D / Time** = _____

Total Smiles / Time = _____

Appendix C

C-Rater Witness Information Sheet

Name of Rater: _____ **Date:** _____

Charges Against the Defendant: _____

Witness Role:

Victim Defendant Eyewitness Expert Law Enforcement

Examined By: Prosecution Defense

Mode of Testimony: Direct Examination Cross Examination

Witness Gender:

Male Female

Witness Ethnicity:

African-American Caucasian Hispanic Asian Other

Approximate Witness Age:

19-25 26-35 36-45 46-55 56-65 66-75 75 +

Witness Attractiveness:

1 = Not at All Attractive **5 = Neutral** **10 = Very Attractive**

1-10: _____

Appendix D

S-Rater or C-Rater Qualitative Observations

Name of Rater: _____ **Date:** _____

Qualitative Comments – Aspects Observed During Witness Testimony:

Appendix E

Witness Credibility Scale

Instructions: *Please rate the* ***defense expert witness*** *for the following items on the scale provided.*
If you are unsure, please take your BEST GUESS.

Example:

1	*2*	*3*	*4*	*5* ✓	*6*	*7*	*8*	*9*	*10*

Dressed Formally — *Dressed Informally*

1	2	3	4	5	6	7	8	9	10

Unfriendly — Friendly

1	2	3	4	5	6	7	8	9	10

Disrespectful — Respectful

1	2	3	4	5	6	7	8	9	10

Unkind — Kind

1	2	3	4	5	6	7	8	9	10

Ill-mannered — Well-mannered

1	2	3	4	5	6	7	8	9	10

Unpleasant — Pleasant

1	2	3	4	5	6	7	8	9	10

Untrustworthy — Trustworthy

1	2	3	4	5	6	7	8	9	10

Untruthful — Truthful

1	2	3	4	5	6	7	8	9	10

Undependable — Dependable

1	2	3	4	5	6	7	8	9	10

Dishonest Honest

1	2	3	4	5	6	7	8	9	10

Unreliable Reliable

1	2	3	4	5	6	7	8	9	10

Not confident Confident

1	2	3	4	5	6	7	8	9	10

Inarticulate Well-spoken

1	2	3	4	5	6	7	8	9	10

Tense Relaxed

1	2	3	4	5	6	7	8	9	10

Shaken Poised

1	2	3	4	5	6	7	8	9	10

Not Self-Assured Self-Assured

1	2	3	4	5	6	7	8	9	10

Uninformed Informed

1	2	3	4	5	6	7	8	9	10

Illogical Logical

1	2	3	4	5	6	7	8	9	10

Uneducated Educated

1	2	3	4	5	6	7	8	9	10

Unwise Wise

1	2	3	4	5	6	7	8	9	10

Unscientific Scientific