The credibility of news photography in the digital age

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THE CREDIBILITY OF NEWS PHOTOGRAPHY
IN THE DIGITAL AGE

by

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Bachelor of Science
Northern Arizona University
1993

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of the requirements for the degree of

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ABSTRACT

The Credibility of News Photography in the Digital Age

by

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Professor of Communication
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Photographers have been manipulating photographs since photography’s invention, but digital imaging technology presents photographers with unlimited possibilities. Digital imaging technology allows both simple and complex manipulations to be completed easily and quickly, unlike traditional techniques that are both difficult and time consuming. Additionally, detecting digital manipulation is virtually impossible, jeopardizing photography’s referent to the original scene captured through the lens of a photographer’s camera.

A review of the literature demonstrated a need for research in relation to the media consumer because prior research focused on media practitioners and their tolerance or intolerance for digital manipulation practices. This thesis explores the credibility of news photography in the age of digital manipulation technology as perceived by consumers of mass media. A quasi-experiment was performed to determine if exposure to published examples of digital manipulation, or to a
videotaped demonstration of digital manipulation techniques, or to both would affect subjects’ perceived levels of the credibility of news photography.

Results showed little significant difference between treatment groups, but rather, an agreement among all groups that the credibility of news photography is declining and that digital technology does threaten the credibility of news photography.
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CHAPTER 1

INTRODUCTION

Those who invent the technologies that transform our culture have a lot in common with Pandora. They're pioneers, to be sure, but their abilities as prophets are necessarily limited. It's not that they can't predict the logical, practical applications of their brainchildren, who in many cases served as their inspirations. But there's simply no anticipating all the unforeseen consequences of a technology—the unexpected, eccentric, even lunatic uses for a new tool that a culture may find once it has been devised and popularized.

Photography is an excellent case in point. Its inventors certainly understood the radical nature of the medium they were unleashing on an unsuspecting world. Yet I don't believe that in their wildest dreams they envisioned what would become of their discovery—what we do with (and to) the world today through this process, what we assume as a result of it (Coleman, 1990).
One hundred and fifty years after its invention, photography is nearly unlimited in its array of applications, functions, and uses, ranging from journalism, to history, to art, to court cases, and beyond. While the inventors of photography may never have envisioned some of those ideas, the changes that are occurring now in the photographic world due to the advent of digital imaging would certainly have been unimaginable. An 1844 advertisement for William Henry Fox Talbot's *The Pencil of Nature*, the first published photographic book, said, "The plates of the present work will be executed with the greatest care, entirely by optical and chemical processes. It is not intended to have them altered in any way, and the scenes represented will contain nothing but the genuine touches of Nature's pencil" (Ritchin, 1990, p. 1). This historic ideal is being replaced by the digitally manipulated images created by unregulated editors, publishers, photographers and journalists who have this new technology at their fingertips. "Whenever technology advances faster than ethics and law, the potential for abuse exists. Answering yes to the technical question, 'Can We?' is much simpler than addressing its ethical counterpart, 'Should we?'" (Swan, 1995, p. 80). Because photographs can be easily manipulated in a computer using digital technology, photography today may be losing Fox Talbot’s distinction of being unaltered, genuine representations of nature.

A heightened awareness of digital manipulation, brought on by the recent upsurge of available technology, prompted increased discussions on the subject. A common concern by individuals in the area of mass communications has encouraged research in relation to photography's credibility in the age of digital manipulation.
An area of great interest is the field of photojournalism where photographers use the camera in much the same way a reporter uses a pencil: to record news events for newspapers and magazines (Lovell, Zwahlen, & Folts, 1993, p. 325). Credibility is crucial because people read these publications seeking the truth about newsworthy events and individuals. The National Press Photographers Association's 1989 president, John Long, puts into perspective the importance of credibility in news photography with this view of photojournalism: "Our profession allows all who view our work to 'see' history...No one has the right to change history" (Traver, 1994, p. 8). Because Long actively points out the ethical dangers of digital manipulation to the field, he has been called the "Pope of ethics" and "a lifeguard over manipulation's troubled waters" (p. 6-7).

The issue of credibility in photojournalism is personal for me because I am partially defined by my photography. If my photography is not credible, then neither am I. The famous French photographer Henri Cartier-Bresson believed that any photograph would be an autobiographical statement: “The discovery of oneself is made concurrently with the discovery of the world around us which can mold us, but which can also be affected by us” (Cartier-Bresson as cited in Stoekl, 1994, p. 634). According to Cartier-Bresson, that is what the self is—the “simultaneous recognition, in a fraction of a second, of the significance of an event as well as of a precise organization of forms which give that event its proper expression” (p. 634). As a photographer using Cartier-Bresson’s definitions, I am looking for what he called the “Decisive Moment,” which is that single instant when objects within the
frame organize themselves into a strong composition and also reveal something about themselves that is worth capturing on film (Lovell et al., 1993, p. 104). The "Decisive Moment" is actual reality because the elements within a situation organize themselves; they are not being manipulated by technology. The "Decisive Moment" is also actual reality because a simultaneous discovery of oneself and of the outside world is made at that time. I am defined by the actual events that I photograph, not by images digitally altered or created in a computer; I am defined by those moments worth capturing on film, and I am defined as a photojournalist. The real world to me is the world that I walk through every day, it is the world that I see taking shape before me, and it is a world that exists in its own right, not one created by other means. The real world is where I actively search for those "Decisive Moments."

Even in its purist sense, photojournalism is more than just representing reality and documenting news; photojournalism extends well beyond merely capturing "Decisive Moments." "In its own way, photojournalism can be very high art, indeed. It can freeze forever moments of history, turning them into icons that shape our collective consciousness while empowering us to greater heights" (Henkin, 1995). Whether I am photographing social events, spot news, or the grandeur of nature, I am capturing bits of reality that, at the time I photograph them, exist. This notion of existence is what digital imaging technologies question.
History Versus Technology

Traditionally, photography has been viewed as believable depictions of reality because it has been presented to and received by the public as such and, "photography as a medium doesn't cast doubt on reality's actual existence" (Batchen, 1994, p. 48). People hold to the adage that the camera does not lie, even though photographic image manipulation has occurred since photography's invention. Historically, unlike other media such as drawing and painting, photography objectively captured actual events, and except for difficult and time-consuming alteration techniques, photography could not be manipulated without the change being noticeable (Potter, 1995, p. 497). We view photographs as reality on a daily basis when we pick up a copy of a newspaper or magazine in search of the state of affairs of the world. We believe what we see when we look at and read *The New York Times, Time, or Newsweek*. We trust these publications to tell us and show us what is actually happening or did happen in the world. "At times, our very judgments concerning events are based on the photographs available" (Henkin, 1995).

But, as is the nature of the written word, the nature of photography is also inherently subjective because it is a human act that allows for individual interpretation (Goldsmith, 1991, p. 68). Photographers look at situations differently giving viewers the chance to see subjects through their eyes, and experience a scene as they have perceived it. This personal view of photography enables photographers to develop their own style, making it possible for photography to be an art, and also
for the camera to lie. "But at least photographs begin with an original negative and thus with an original model, a referent in the material world that at some time really did exist to imprint itself on a sheet of light-sensitive paper" (Batchen, 1994, p. 48).

Digital imaging casts doubt on reality because "digital processes result in pure inventions that have no origin other than the computer program itself; they produce images that are no more than signs of signs" (p. 48). Whereas photography results in some form or, in the least, an interpretation of reality, digital processing results in inventions that are no more than simulations ending in virtual, not actual, realities.

The unlimited elasticity of the digital process suggests that it has more in common with painting or drawing than photography. In both hand-rendered and digital processes, the resulting picture is wholly synthetic...The effect of this manipulation is monumental: all remaining links between the image and the world of optical and physical fact are severed (Davis, 1995).

Although digital imaging is an exciting new artistic tool, "in journalism, the difficulty of manipulation is more a moral than an artistic dilemma, yet one that also touches on the very aspect that makes photography special—the ability to record objectively what lies before it" (Van Riper, 1994, p. 19). In this thesis a quasi-experimental design is used to determine if exposure to digital manipulation technology or to digitally manipulated examples published in the mass media is causing a decline in mass media viewers' perceived levels of the credibility of news photography. "Because photographs appear to freeze real events in real time, they
have taken their place beside cultural artifacts and literary records as important data for historians" (Rosenblum, 1990). Digital imaging undermines the whole idea of capturing real events because, although digitally mastered images may look like the real photographs we are traditionally accustomed to seeing, they may not be. "The whole idea that a photograph represents something real collapses. The new medium may offer us pictures that look and feel exactly like the photos of old; there are just no built-in guarantees that these capture anything that actually existed" (Irwin-Zarecka, 1996). Ethicist Don Tomlinson forecasts:

If...consumers of photojournalism decide to revoke the credibility they have bestowed on photojournalism for the last century, it will be because the processes of photojournalism were at some point so revolutionized that photographic reality no longer could be trusted to be the result. (Tomlinson, 1992, p. 52).

The possibility of deception is a threat not only to the credibility of photography and photojournalism, but also to the future history of our society. Photography plays a vital role in shaping our perceptions of society and because digital technology allows for photographic inventions of virtual realities unbeknownst to the viewer, their perceptions and views will be altered accordingly. Instead of making conclusions and decisions based on reality, viewers could be making decisions based on the virtual reality created by digital imagers.

Frederick R. Barnard once said, "One picture is worth ten thousand words" and that cliché also rings true for photographic images (Printers' Ink 10 March,
1927, as cited in Augarde, 1991). Viewers find meanings and information in images that may have profound effects upon judgments, decisions, feelings and so forth. Although the study of persuasion has often been limited to the spoken word, scholars from several disciplines are beginning to explore and map the contours of what has been called a “visual language” (Medhurst & Benson, 1991, p. 193). The notion of photography as a visual language leads critics to the task of learning how to evaluate images as they would written or verbal language. Medhurst and Benson suggest evaluating language entails learning how to read holistically, taking into account not only various literal meanings, but connotations, shadings, tones, figurative meanings, and relationships to the culture at large: social, political, economic, religious, racial, sexual, and communicative (p. 160).

Paul Messaris (1993) adds another dimension to the notion of photography as a visual language and the resulting suggestions about evaluating visual images. Messaris asked this question in reference to visual imagery, “does the ability to comprehend what is being represented in a visual image require a prior visual 'literacy' on the part of the viewer?” (p. 277). This question directly affects the impact that photographs make upon viewers, and subsequently affects the degree to which digital manipulation will affect the resulting reactions. Messaris explains that in the academic literature on this topic, it is commonly taken for granted that image-specific, learned conventions are as indispensable to the understanding of visual communication as linguistic conventions are to reading or the interpretation of speech (p. 277). Despite this assumption, Messaris argues that learning to
understand images does not require the lengthy period of initiation characteristic of language learning (p. 290). Basically, Messaris’ argument contends that images can make sense to inexperienced viewers, despite all the inherent differences between images and reality, such as lack of color, or the transition from three-dimensional reality into a two-dimensional representation. Because there is not a need for prior knowledge or “literacy” in understanding images, Messaris also concludes that images can permeate cultural boundaries more readily than written or verbal language can (p. 290). Whether scholars increasingly accept photography as a visual language and study it as such, or adopt the notion that images require no prior visual literacy, photography’s credibility remains crucial, providing more reason to study the effects of digital manipulation.

Photography’s importance to society as information, as history, as language, as emotion, and as all that photography is, and can be, warrants the study of digital imaging’s effect upon it. Iwona Irwin-Zarecka (1996), an associate professor of sociology and anthropology offers this, "If there is one lesson from studying different technologies, it is that their impact cannot be predicted by even the wisest of experts." Irwin-Zarecka is not sure what direction digital imaging will lead us, but she agrees that "the disconnecting of photographic image from its base in reality matters." Experts may not be able to accurately predict the impact of technology, but digital imaging has progressed beyond predictions. Digital manipulation has been an issue for over a decade, most notably since National Geographic brought it to light by moving one of the pyramids of Giza to make the photograph fit the

Now is the time to research what is happening with the increased use of digital imaging in recent years due to technological upgrades to determine if damage is being done. Ignoring this issue will only cause harm to a field founded in truth for more than a century. "For newspapers, magazines and wire service journalists to embrace this technology with little serious guidelines cheapens journalism" (Mahon, 1996, p. 48). If photography loses its credibility in the news world as being truthful representations of reality, then photography will also lose its credibility in the courtroom, in historical contexts, and all other areas where photography is used to represent reality.

Definitions

In this quasi-experiment, credibility and digital manipulation must be defined to determine the scope, limitations, and applicability of the results. This section defines these terms and also looks at how digital technology is being utilized in the field of photojournalism, as well as how it is being accepted and viewed by professionals in the field. Research up to this point has targeted professional practitioners in the mass media to gain their viewpoints on digital manipulation, which provides a background for this study addressing media consumers' views.
Credibility

Credibility has traditionally been of importance in researching the mass media because public inability to believe the news media limits the nation’s ability to inform the public, to monitor leaders, and to govern (Gaziano, 1988, p. 267). Additionally, decreased public trust can lead to diminished freedom of the press and can threaten the economic health of some media (p. 267). But despite interest in the topic of credibility, an agreed-upon definition in the field is elusive (Meyer, 1988, p. 567). According to *Webster’s Encyclopedic Unabridged Dictionary of the English Language*, to be credible is to be capable of being believed; believable. *Webster’s* continues to say that being credible is being worthy of belief or confidence; trustworthy. Webster’s definitions indicate that for photojournalism to be credible, it must be believable, it must be worthy of confidence, or it must be able to be trusted. These definitions may appear to provide limitations to researchers, especially in studying photojournalism, because they do not reference truth which is specifically what digital manipulation challenges. But, taking a broader definition of credibility can actually be advantageous because, as discussed earlier, photography has lied since its invention, and it is a subjective medium. Edwin Martin (1991) suggests that credibility lies not so much in being truthful as in striving for the truth in certain reader-recognized ways (p. 162). Martin also believes that readers do not expect the truth so much as they expect good faith, and good faith involves meeting expectations (p. 162). Tom Wheeler and Tim Gleason (1995) share a similar view in their conviction that the survival of credibility will depend on whether what is
promised is delivered, or what is expected is delivered (p. 9). Wheeler and Gleason believe the ultimate test of credibility is a test of honesty and perception: are consumers being mislead? Do consumers think they are being mislead? (p. 9).

Newhagen and Nass (1989) put forth further complexities in defining a standard for credibility because they differentiated between a source-oriented concept of credibility versus a mediated-approach concept. “If credibility is defined from a receiver oriented perspective, credibility is the degree to which an individual judges his or her perceptions to be a valid reflection of reality” (Newhagen & Nass, 1989, p. 278). Newhagen and Nass continued with the idea that another dimension is added to the concept when information is mediated by technology such as the modern mass media’s reporting of the news. “Mass media news credibility, then, is the perception of news messages as a plausible reflection of the events they depict” (p. 278). Both of these concepts acknowledge the idea that credibility is based on perceptions of reflections of reality, but more importantly, the concept of mass media credibility supports the idea that even though the news media’s reflection of an event may not be exact, the key is that its reflection is plausible, or trustworthy.

Previous research demonstrates the problems involved with testing credibility in mass communication because results vary based on the definitions provided (Robinson & Kohut, 1988; Clark, 1986; Gaziano, 1988). Two conflicting surveys conducted in 1985 and 1986 exemplify the confusion caused with defining credibility. In their 1985 report “Newspaper Credibility—Building Reader Trust,” the American Society of Newspaper Editors found that three-fourths of all adults
have some problem with the credibility of the media (McGrath, 1985, p. 13). In 1986, the Gallup Organization did a new survey in which they found that "There is no credibility crisis for the nation's news media. If credibility is defined as believability, then credibility is, in fact, one of the media's strongest suits" (Times Mirror, 1986, p. 4).

This example shows that narrowing the scope of credibility to believability may have provided a more directed response in the Gallup survey, but the public's belief in the press could directly affect their feelings of the press's overall credibility. For example, if the public believes a photograph has been unduly manipulated, they may view the act as deception in effect lowering their trust and confidence in the media, the other two components of credibility as defined by *Webster's Unabridged Encyclopedic Dictionary of the English Language*.

In an effort to avoid confusion, this study addresses credibility in two ways. First and foremost, subjects are questioned directly in the survey about the credibility of news photography by using the term credibility itself, as opposed to an alternative definition. Secondly, on a more experimental basis, subjects are questioned indirectly about the credibility of news photography by using McCroskey's (1966) source credibility scale. McCroskey's scale is used in this research because news photography is a source of information provided to media consumers.
**Digital Manipulation**

Digital imaging starts with images being scanned or electronically captured by a digital camera. "The scanning device breaks down the image into thousands of tiny geographic picture elements known as pixels, assigning a number to each pixel" (Potter, 1995, p. 498). At this point the operator has unlimited control of the image by manipulating the pixels which represent various characteristics of the image. Colors can be changed altogether so that the resulting image looks nothing like what was initially scanned or captured. Parts of an image can be removed entirely, or substituted by parts of other images and the resulting image looks real.

Photographers have been manipulating images since photography's invention, but there are three major differences between traditional photographic manipulation techniques and the alteration techniques now available through digital processes: (a) the extent of manipulation possible, (b) the ease and speed with which images can be altered, and (c) the virtually imperceptible nature of the alterations by digital scanning (Potter, 1995, p. 499).

For the purposes of this study, digital manipulation refers to changes made to news photographs in a way that alters the original scene photographed. Three main areas will comprise manipulation: (a) the addition or subtraction of elements, (b) a significant, intentional change in color, or (c) the alteration of placement of objects within the image. The issue of creating images that are entirely fictional through digital processes will not be addressed in this study. The field of photojournalism, even in the age of digital technology, still starts with a referent to
reality captured by some type of camera. This study focuses on what happens after an image has been captured by a photographer using a camera.

Compounding the ramifications of the three differences which allow for extensive manipulation to be done quickly and easily without being detected is the availability of the technology to do so. "Traditionally, digital technology was far too expensive and difficult to be of interest to the average amateur photographer; however, as the technology has developed, the costs have plummeted and extensive specialized skills are no longer needed to create your own desktop darkroom" (Potter, 1995, p. 499). On the professional level, technology has advanced as well, granting digital photojournalists flexibility in shooting and in getting the images to press. The newest digital cameras can quickly change film speed to suit different lighting situations, or add more focal length for distance shooting while shooting more frames per second with increased memory. Perhaps the most obvious advantage digital photographers have over traditional photography is the element of time. Digital images are recorded on a small disk that can be read by a laptop computer where the photographer can review, edit, caption, and electronically send them to their newspaper.

Professional Practice

On January 28, 1996, digital photography made a major breakthrough when the Associated Press went exclusively digital for the first time in its history, shooting Super Bowl XXX, the single largest annual sporting event the AP covers, without a
single role of film (Alabiso, 1996). The pictures that appeared on front pages around the world signaled a new era in photojournalism because it was the first time a worldwide news organization photographed a major news event entirely electronically (Alabiso, 1996). "I have watched the progress of this technology and used it since its beginning," said Ed Reinke, Louisville photographer and loyal film user. "This new software is the single greatest stride I've witnessed. The whole game [photojournalism] changed with the Super Bowl" (Alabiso, 1996). The increased use of digital cameras makes the ease of digital manipulation even greater because a photographer can manipulate an image before sending it to a newspaper where it can be manipulated yet again by editors or other staff members. Ultimately the digital camera provides no equivalent to the original negative produced by traditional film. This leaves no way for viewers to discern what the original image looked like, and thus no way to determine if it was digitally manipulated or altered in any way (Grundberg, 1990; Reaves, 1987). "While it is a powerful tool to save money and time when used wisely, there is a potential for abuse" (Swan, 1995, p. 80). The mere presence of new technology poses temptation to use techniques previously unavailable (Harris, 1991; Ritchin, 1990).

Sheila Reaves (1995) found that newspaper editors are consistently against digital manipulation of spot-news photos, but their views on soft-news photos such as illustrations and features are more accepting. Magazine photo editors and art directors in another Reaves study (1991) agree that news photos should not be digitally manipulated, because such photos are intended to capture reality. But, the
photo gatekeepers for specialized magazines indicated that feature and cover photographs fall somewhere lower on the reality hierarchy, and are more justifiably manipulated (Reaves, 1991, p. 181). Despite this apparent leniency for soft-news and feature photos, a 1992 Reaves study showed an overwhelming majority of daily newspaper editors disagreeing with any alterations or manipulations made to the fifteen samples they were shown other than burning and dodging, the addition or subtraction of light respectively to lighten or darken areas. This discrepancy in attitudes toward digital manipulation proves to be the rule in the field and no broad-based standards or regulations have been set by media groups.

Digital manipulation policies vary from publication to publication, and apparent differences in treatment of digital manipulation exist. One study found that only 21% of newspapers surveyed had written standards on photo manipulation leaving the issue open for interpretation by the majority of journalists (Davis, 1992). The general consensus of editors and photographers in a 1989 article in *News Photographer* supported Reaves’ 1995 study in which digital manipulations were acceptable at the soft-news level, but there were still dissenters who do not believe that any manipulation should exist (Rogers, 1989). “We will not manipulate any type of news or feature photograph,” Dennis Schroeder, a staff photographer at the *Rocky Mountain News* in Denver, said. “We don’t want to jeopardize our credibility” (p. 19). Additionally, the majority questioned in the article also stated that if photographs were manipulated, they would always be labeled as such, which
ultimately leaves a door open to manipulation, and evokes the debate over what
constitutes an illustration.

Some have already passed through this door into digital manipulation’s gray
area in relation to photo illustrations, “photographs created to visually interpret or
present an idea” (London & Upton, 1994, p. 360). “Although there is disagreement,
on a case-by-case basis, whether a digitally manipulated photograph qualifies as a
photo illustration and thus passes muster, the industry attitude is to err on the side of
cautions” (Potter, 1995, p. 501). One example of this would be the February 16,
1994, cover of The New York Newsday that showed a photograph of Tonya
Harding and Nancy Kerrigan skating together before their scheduled Olympic
match. The caption in the corner did acknowledge that the image was a composite
illustration by saying, “Tonya Harding, left, and Nancy Kerrigan appear to skate
together in this The New York Newsday composite illustration. Tomorrow, they’ll
take to the ice together” (Lester, 1995). But many readers were fooled by the
image. The fact that the image was a combination of two photographs was not
obvious, and viewers were caught by the photograph before they noticed the small
caption in the corner (Abrams, 1995, p. 28).

An interesting way of looking at the issue of digital photography is to
compare photographs to the words of printed news stories. If a journalist made up a
story about Nancy and Tonya, a responsible editor would never print it because the
words would be a lie, ironically just like the photograph of the two of them together
(Traver, 1994, p. 8). This comparison leads to the idea that news photographs
should be respected equally with news stories, and as NPPA's 1989 president John Long says, "If a photo looks real and is used in a context where the viewer expects to see real photos, then the photo better be real" (p. 8).

Because digital imaging makes detecting whether an image has been manipulated nearly impossible, digital manipulation is a temptation that some will not be able to withstand. According to Deni Elliot, director of Dartmouth's Ethics Institute, giving in to such temptation would be a grave mistake. "To many people," she says, "a news photo is a faithful representation of an actual, physical reality. They've come to depend on the idea that if they'd been there, that is what they'd have seen" (Daviss, 1990, p. 57).

Despite concerns and disagreements about the uses of digital manipulation, Potter outlines three broadly accepted exceptions to the general rule of not manipulating news images. "There is little industry concern regarding the manipulation of news pictures for the purposes of (1) cleaning up the technical appearance of an image, such as removing dust particles, scratches, and the like, (2) creating 'photo illustrations,' or (3) enhancing a photograph to depict 'more accurately' what the photographer saw" (Potter, 1995, p. 501). The current lack of consistency in the professional field of photojournalism in relation to following the general rule of not digitally manipulating news images strengthens the need for research in the public arena in relation to digital manipulation.
Surfacing Themes

The professional fields of photography and photojournalism have engaged in an ongoing dialogue over the last decade in relation to the effects of digital manipulation on the credibility of news photography, but few academic research projects have been completed to test the questions that rise out of the new technology. The research that has been completed focuses on the mass media and their views and reactions to digital manipulation, not the recipient public which this quasi-experiment addresses (Reaves, 1987, 1993, 1995; Potter, 1995).

The professional literature expresses several positions and opinions but the following five main themes surface: (a) photography has always lied through photographic manipulation; (b) never before has manipulation been so fast, easy and undetectable; (c) judgment of photography relies on contextual elements; (d) digital technologies are affecting the credibility of photography and are pulling it down at an alarming rate; and (e) the context will not wholly protect the credibility of photography.

The first two themes—that photography has always lied through photographic manipulation, and that never before has manipulation been so fast, easy and undetectable—lead to a description of traditional photography and digital photography in chapter two. Descriptions of the processes behind traditional photography and digital photography should help readers understand how the digital age is speeding up the processes and techniques in the field of photography. “It's
true that photos have been manipulated since the days of the daguerreotype but never as quickly and convincingly as they are now” (Daviss, 1990, p. 57).

The third theme is that photography is most often judged in context. “You can't trust the medium; you can only trust the source” (Brand, Kelly & Kinney, 1985, p. 43). This theme gives further meaning to the study of digital manipulation because it extends the idea that not only must the medium of photography strive for credibility, but the contexts that present photographic images must also strive for credibility. “If the public evaluates truth as a question of context, then every step should be taken to ensure that all information in a traditional news package is gathered, prepared, and presented in an honest and accurate fashion” (Sherer, 1994, p. 34). One of Mexico's enthusiastic proponents of digital photography, Pedro Meyer, also agrees that the credibility of a photograph lies in its context. He likens photography to words. “It's only now that we are making so much fuss about pictures, because for the first time, words and images can be altered in quite the same way” (Snow, 1996). Meyer went further to say that we have learned not to believe words just because they are written or spoken; our interpretation of their credibility is based on who is delivering the message and how it is delivered. He believes that photography will eventually receive the same cautionary treatment by viewers (Snow, 1996). Meyer's idea of language and photography was taken a step further by Irwin-Zarecka (1996) who said, “If the creative powers of digital imaging are allowed full reign, the authority of photography as the truth-telling medium could well give way to the much older codes of the oral, story-telling culture.”
Although the idea that photography has always entertained credibility issues is evidenced in the literature, the literature also indicates the fourth theme that digital technologies are affecting credibility and pulling it down at a faster rate than ever before. “Computer technology did not start the decline in the credibility of pictures, but it has hastened it” (Lester, 1995).

The literature also supports the fifth theme that context will not wholly protect the credibility of photography. “Perhaps now more than ever there lies on the horizon the possibility the public may no longer be willing to openly embrace the honesty and integrity of news photography” (Sherer, 1994, p. 34). This position stems from the use of manipulation by publications with well-established credibility, such as National Geographic’s movement of the pyramid, or Time’s cover illustration of O.J. Simpson’s police mug shot that dramatically altered the appearance of the photograph making his face much darker and more sinister looking. “The use of such manipulation in newspapers threatens to undermine the trust people have in news photography” (Matthews, 1993, p. 13).

Although research abounds on the subject of source credibility, little research is directed at the credibility of the image outside the context of the publication. One study, performed by Kelly and Nace in 1994, looked into the questions of credibility in some relation to digital manipulation. The study investigated the effects of publication context and of specific knowledge of digital manipulation technology on a small group of newspaper readers with the purpose of determining if readers find the same photograph less believable in one paper versus another. Kelly and Nace
also wanted to determine if a short demonstration video about digital manipulation of photographs caused students to evaluate the same set of photographs differently than readers who had not seen the demonstration video. Their results showed that the Photo Shop® demonstration video did not significantly affect subjects' assessment of the photographs they evaluated or the newspapers from which they had apparently come. However, it should be noted that the video shown in Kelly and Nace's study was a general explanation of Photo Shop® software and did not show any examples of manipulated photographs. One result they discovered that was not hypothesized lends special support to further study in this area because it supports the idea that people generally view photographs as truthful. Kelly and Nace found that while photographs in The New York Times held the credibility of the newspaper itself, photographs in the National Enquirer were more believable than the newspaper itself. This finding lends credence to the need to study the credibility of photojournalism because people might believe photographs even if they do not believe that the publication or source is credible.

Another study by Reaves (1993) investigated the attitudes and tolerance of daily newspaper editors toward digital manipulation. Reaves' findings showed that, in general, the 511 photographic editors that responded to her survey were very critical of any kind of digital alteration or manipulation, except for traditional practices of printing such as dodging and burning (Reaves, 1993, p. 149). Despite this general consensus against digital manipulation, varying numbers of photographic editors did agree to some of the computer editing changes (p. 151).
Reaves found that the editors who held the highest levels of intolerance for digital manipulation shared the following characteristics: (a) they were familiar with digital imaging computer technology such as Scitex, Crossfield or Hell Graphic systems; (b) they possessed backgrounds as working photojournalists; (c) they reported higher levels of professional development activity, such as going to at least one photo seminar in the last two years or being a member of the National Press Photographers Association; (d) they reported having a strong influence in day-to-day picture editing decisions; and (e) they had graduated from college or held graduate degrees. Although Reaves' study directly addressed editors' attitudes and tolerance toward digital manipulation, many responding newspaper editors did discuss the potential loss of credibility when making content changes. "One photo editor echoed many others when he said, 'Why not change the quotes in a reporter's story to make it better? No way!! You just don't. When readers learn that you electronically alter photos then your papers/magazines lose credibility. Losing your credibility makes you worthless’" (Reaves, 1993, p. 141). This concern by newspaper editors also strengthens the need for further research to determine if the credibility of news photography is being affected by digital manipulation practices since some editors are tolerant of such practices.

Preview

Chapter 2 briefly explains and explores traditional and digital photographic processes to demonstrate the advantages and disadvantages of each method.
Chapter 3 provides the purpose, methodology, and a description of the quasi-experiment performed to test the credibility of news photography based on exposure to published digital manipulation samples and digital manipulation techniques.

Chapter 4 presents the results of the experiment. Chapter 5 discusses the results and offers conclusions.
The traditional processes in photography are linear, involving exposure, development, and printing, but digital photography is nonlinear (Gardiner, 1994, p. xiii). "In the digital world, photographs become as fluid as a kinetic sculpture, able to be manipulated or changed with no clue left as to the origin of the work" (Aaland, 1992, p. 4). Whereas traditional photography involves chemical processes, digital photography is an electronic process employing the principles of physics not chemistry (p. 5). This transition to electronic imagery eliminates referents to the physical world, leaving viewers with decisions to make about the authenticity, credibility, and truthfulness of images. The resulting quality of digital processes compounds viewers' decisions because as Kurt Foss, director of the electronic photojournalism lab at the University of Missouri School of Journalism, said, "You can fool 99 percent of the people with technology today; it is that seamless" (Lundstrom & Hoppe, 1991, p. C2). This chapter gives basic descriptions of both processes, chemical and electronic, providing a foundation for further understanding.
of the direction of the field of photography in the digital age. The chapter concludes with an overview of the advantages and disadvantages of traditional photography and digital photography.

Chemical Versus Electronic

**Chemical**

Color films are made with three color sensitive layers that when combined form a full-color image of the original scene by taking advantage of the fact that any color can be produced by mixing a few basic or primary colors (London & Upton, 1994, p. 203). Black and white film has four primary layers that when combined are only about 0.005 inch thick, but only one of the layers in black and white film is sensitive to light (See Figure 1). Because black and white film is less complex than color film, it will be described in detail to demonstrate the chemical process of photography.

![Figure 1: The structure of black and white film (Lovell et al., 1993, p. 117).](image)
Underneath the top, scratch-resistant layer of black and white film, lies the photographically active layer called the emulsion which contains light sensitive silver halide crystals suspended in gelatin that when exposed to light are selectively converted into metallic silver atoms (Lovell et al., 1993, p. 118). The size of the silver halide crystals determines not only the speed, or light sensitivity of film, but also the film’s quality or graininess (See Figure 2). Generally, the larger the crystals are, the more sensitive the film is to light, and the less detail they record, or the grainier images are. Conversely, the smaller the crystals are, the less sensitive the film is to light, and the more detail they record, or the less grainy images are. Regardless of their size, when silver halide crystals are exposed to light, only a few of the silver ions in the crystal are converted to metallic silver atoms at which point the image on the film is invisible and is called a latent image (See Figure 3). During film processing, the developer recognizes these partially exposed crystals and converts the remaining silver ions into metallic silver greatly magnifying the effects of exposure making the image visible (p. 118). The fixing stage of film processing

![Granular structure of slow and fast films](image)

**A. Fast film**

**B. Slow film**

Figure 2: Granular structure of slow and fast films (Lovell et al., 1993, p. 119).
removes all unexposed, light sensitive silver crystals making the visible image permanent.

![Figure 3: Film stages from exposure through fixing the image (Lovell et al., 1993, p. 118).](image)

Most color materials and one type of black and white film use the chromogenic process which differs from the silver halide film process discussed above because the materials contain dye couplers as well as silver halide crystals in the emulsion layer (London & Upton, 1994, p. 68; Lovell et al., 1993, p. 269). The dyes in the emulsion build up proportionally during development to the silver halide crystals that have been exposed to light. The silver is then bleached out leaving the colored dyes, or black dyes for the black and white film, to form the visible image (London & Upton, 1994, p. 68).
After completing either the silver process or the chromogenic processes to produce an original negative, printmaking from photographic films involves another series of exposures and development requiring more chemicals and, whether it is done by hand or machine, a further investment of time. Editing and alterations using films and printing techniques are especially time consuming because they often require multiple exposures, intermediate negatives, or additional chemicals. Even simple techniques like burning and dodging where light is respectively added or subtracted to or from the final print require careful attention and add additional time and expense to the process because several test prints must be made to accomplish the desired result. More advanced techniques such as combining negatives or major color alterations may require several hours to complete. The key factor to any alteration in the traditional photographic process is that they must be recreated for each subsequent print.

Electronic

Instead of using the light sensitive properties of silver halide crystals to record images onto film, digital photography translates reality into numbers which computers can read and alter. This translation can be accomplished directly by using a digital camera that automatically records images in digital form, or a scanning device can be used. Because traditional methods produce images that are in analog form, that is, images that have a continuously variable tonal scale with unbroken gradations of dark to light, analog images must be converted into digital form in
order for computers to utilize the information (See Figure 4) (London & Upton, 1994, p. 276).

Pictures, slides, and negatives are digitized through a process where the image is sampled in a series of positions to analyze and record the brightness and color at each point (London & Upton, 1994, p. 276). The positions where the image is sampled and recorded are called pixels which is short for picture elements. Pixels are arranged in a grid format in which each square is assigned a set of numbers to designate its position, brightness, and color (p. 276). Figure 5 shows an image that has been scanned into digital form and also shows a subsection of the original image enlarged to the extent that the individual pixels composing the image are visible. The greater the number of pixels per inch, also referred to as dots per inch or resolution, the greater detail the image shows making the digital image more closely resemble its analogue counterpart. This system is comparable to that of film in which the size of the silver halide crystals determines the detail in a print in the same manner that pixels do for a digital image.

After images have been digitized through this process, the differences between traditional and digital photography become even more apparent because of the ease and speed of manipulation possible using image-editing software such as Adobe Photo Shop®. The photographer is free to enlarge or reduce all or part of the image; to flip all or part of it left to right or right to left; to flop it top to bottom; to rotate through 360 degrees; to move or delete objects; change colors; combine
Figure 4: Analogue and Digital Sampling. The analogue sample records all information. The digital sample records the information in samples of the original scene. The greater the number of samples the closer the signal resembles its analogue counterpart and the higher the resolution. (Adapted from Davies & Fennessy, 1994, p. 6).
Figure 5: An entire image and an enlarged subsection of that image composed of the subjects face and helmet demonstrate how the image is composed by individual picture elements called pixels for short. (Photograph by Mara E. Vernon © 1997).
the background of one image with the foreground of another; cast shadows in any direction or directions; make objects translucent; stretch or squeeze objects, or stretch one dimension and squeeze the other; make part of a color image black and white; reverse all or some colors; and change perspective/parallax. This is only a partial list of what is possible... The virtually limitless options and possibilities offered by computerized photography are not theoretical, but tangible (Breslow, 1991, p. xiii).

The computer accomplishes these alterations or manipulations simply by changing the numbers assigned to each pixel. Because each generation of manipulations of a digital image is merely a set of numbers in the computer’s memory, no image quality is lost from one generation to the next (London & Upton, 1994, p. 282). Digitalization allows complex manipulations to be performed with many intermediate stages all of which can be saved at any point. The key factor in the digital process is that none of the manipulations will affect the resulting image quality as they would in the traditional processes if, for example, an intermediate negative had to be made. Additionally, once an image is complete, the final version can be saved and subsequent prints will be identical without any further investment of time unlike traditional photographic techniques that have to be repeated every time a print is made. Another feature of digital photography is that alterations of the image can be viewed on the computer monitor allowing for unlimited experimentation without the added expense because a hard copy does not have to be printed to view changes.
Once an image has been digitized and edited to completion, it can be stored in the computer’s hard drive, or it can be stored externally. Digital image storage is archival providing another advantage to digital photography because there is no risk of deterioration of the image (Krejcarek, 1997, p. 8). The image can also be transmitted to a printer that produces a hard copy, a film recorder that produces a positive transparency or a negative, or another computer. A modem can easily transmit digital images over the phone lines to another computer anywhere in the world instantly giving digital photography great flexibility and speed. Figure 6 provides an overview of the digital process.

Advantages and Disadvantages

A description of traditional photographic and digital photographic techniques highlights most of the advantages and disadvantages associated with the processes, but not all. The following section provides a condensed overview of the advantages of digital images over conventional photographs, the advantages of digital cameras over film cameras, and the disadvantages of digital cameras over film cameras.

The five main advantages of a digital image over a conventional photograph are that a digital image can be: (a) quickly corrected, manipulated, or enhanced; (b) sent from one place to another instantly; (c) copied without losing resolution; (d) printed without exposure to chemicals; and (e) stored archivally, without risk of deterioration (Krejcarek, 1997, p. 8).
Capture. If you start with conventional negatives, slides, or prints, a scanner can convert the images into the digital form that a computer can use.

Display. When you want to see your image on more than just the computer's monitor, you can make a print on paper or print the image onto film to make a positive transparency or negative.

A computer is the core of a digital imaging system, driving the monitor, printer, or other devices to which it is attached.

Display. A computer monitor shows the image that you are working on and also displays various software editing tools and other options.

Transmission. You can send an image to a printer, another computer, or other devices, if your computer is connected to them.

Storage. A hard drive stores image files within the computer itself.

Transmission. A modem can transmit data, including digitized images, over phone lines to another computer.

Storage/transmission. External storage devices, such as a removable cartridge disk drive, let you store more image files than can be stored on your computer's internal hard drive. They can also transport a file, for example to computers and printers at other locations.

Capture. There are several types of digital electronic cameras that can be used instead of a conventional camera and film. A digital camera records an image directly in digital form.

Transmission. An electronic transmission device, such as the computer in Figure 6, sends the image to another computer, which can be shared by other users.

Figure 6: An overview of the digital process. (London & Upton, 1994, p. 279)
The three main advantages of a digital camera over a film camera are speed, conservation, and safety (Krejcarek, 1997, p. 29). Digital cameras record images that are transmitted directly into a computer without any chemical processing. Thus, digital cameras not only conserve resources because film and chemicals are not used, but there is also no exposure to humans or the environment at any time to potentially hazardous chemicals used in processing (p. 29).

The four main disadvantages of the digital camera are expense, portability, shutter speed, and quality (Krejcarek, 1997, p. 29). Digital cameras cost many times more than comparable traditional-film cameras, and additionally are generally larger and heavier (p. 29). Perhaps more importantly, while advanced digital cameras are coming close to the acuteness of resolution achieved with film, film has yet to be equaled (p. 29). Part of the problem involved with digital cameras achieving the quality of film is that to achieve higher resolutions, the digital camera must use slower shutter speeds which disadvantages the photographer (p. 29).

Now that the technological processes of both traditional and digital photographic techniques have been explained and discussed highlighting the advantages and disadvantages of each process, Chapter three discusses the methods and procedures of the experiment performed to test the credibility of news photography in the digital age.
CHAPTER 3

PURPOSE AND METHODOLOGY

The quasi-experiment performed for this study investigated the effects of awareness of published examples of digitally manipulated photographs in the mass media and of knowledge of digital manipulation technology on subjects' levels of perceived credibility of news photography. The following hypotheses were tested to determine if digital manipulation technology is causing a decline in the credibility of news photography:

H1: Exposure to published examples of digitally manipulated images will decrease viewers' perceived levels of the credibility of news photography.

H2: Exposure to a videotaped demonstration of digital manipulation techniques will decrease viewers' perceived levels of the credibility of news photography.

H3: Exposure to both published examples of digitally manipulated images and a videotaped demonstration of digital
manipulation techniques will have the most significant effect
on decreasing viewers' perceived levels of the credibility of
news photography.

Method

A convenience sample of University of Nevada, Las Vegas, students was
studied to determine whether awareness of digitally manipulated photographs in the
mass media and knowledge of digital technology are affecting media consumers’
perceived levels of the credibility of news photography. Students in communication
101 classes were used as the study sample to achieve a representative sample of the
general population of mass media consumers. Communications 101 is required
nearly campuswide, providing diversity in student background and experience.
Because naturally occurring groups in the form of classes were used, subjects were
not randomly assigned to treatment groups, thus defining the research design as

Eight treatments were administered to four different study groups including
one control group and three experimental groups with a total of 172 subjects. The
43 subjects in the control group were administered a questionnaire (See Appendix
A) after receiving a short definition of what digital manipulation is in reference to
this study. The three experimental groups received the same questionnaire
following in-class presentations. The 43 subjects in the examples group were
presented with published examples of digitally manipulated photographs (See
Appendix B), the 46 subjects in the video group viewed a videotaped demonstration of how photographs are manipulated digitally (See Appendix C), and the 40 subjects in the video/examples group saw both the published examples of digitally manipulated images and the videotaped demonstration of how photographs can be digitally manipulated.

Students in the examples group were shown real-life, published examples of how images have been digitally manipulated in the mass media, such as the cover of *National Geographic* in which the pyramid was moved, the cover of *The New York Newsday* in which two photos were combined to show Nancy Kerrigan and Tonya Harding skating together when in fact that reality had not occurred yet, and others (See Appendix B). The examples were accompanied by captions that explained to the viewer how the images were manipulated.

The videotape produced by the researcher provided approximately nine minutes of demonstration showing subjects various basic digital photographic manipulation techniques using the software program Photo Shop®. The video was videotaped directly from the computer monitor allowing viewers to see the manipulations happen as if they were viewing an actual computer monitor, not a television set. Additionally, the taping strategy allowed viewers to see not only the results of the manipulations, but, more importantly, the process of achieving the manipulations. Two different photographs were used to demonstrate the addition or subtraction of elements, significant changes in color or contrast, the alteration of the placement of subjects or objects, and creation of special effects.
The questionnaire contained two demographic items: age and gender. Age was categorized with a value assigned to one of the following six categories: (a) 1 = 16-20; (b) 2 = 21-25; (c) 3 = 26-30; (d) 4 = 31-35; (e) 5 = 36-40; and (f) 6 = 41+, while gender was simply 1 = female and 2 = male. Several predictor variables related to the credibility of news photography such as prior background or experience with photography or photojournalism and knowledge of computers and digital manipulation software were asked on a yes/no basis with 1 = yes and 0 = no. One additional predictor variable of weekly newspaper or magazine readership was grouped into categories and assigned values in the following manner, all relating to how many times a week subjects looked at either medium: (a) 1 = 0; (b) 2 = 1-2; (c) 3 = 3-4; (d) 4 = 5-6; (e) 5 = daily.

A five-point Likert Scale was used to explore subjects’ views on the credibility of news photography because this measure is widely used in attitude measurement research and allowed credibility to be directly addressed (Bordens & Abbott, 1996, p. 188). Subjects were asked to circle a number on the scale indicating the degree to which they agreed or disagreed with thirteen different statements where 1 equaled strongly agree and 5 equaled strongly disagree. The statements addressed the accuracy of news photography’s representation of reality, the credibility of news photography, the effect of digital manipulation technology on news photography’s credibility, and the regulation of digital manipulation of news photographs. The statements also addressed the acceptability of the following digital manipulation techniques as applied to news photography: (a) manipulations
that alter the original scene; (b) traditional manipulation techniques accomplished digitally; (c) manipulations that add or subtract subjects or objects; (d) manipulations that significantly change colors; and (e) manipulations that alter the placement of subjects or objects.

McCroskey’s source credibility scale was also used in an effort to gain an additional statistical viewpoint of subjects’ views of the credibility of news photography. McCroskey’s scale is an accepted standard for measuring source credibility so it was utilized in this research because news photography is a source of visual information for consumers of the mass media. The seven-point semantic differential scale included the following twelve sets of opposing adjectives with their respective values: (a) valuable = 1/invaluable = 7; (b) uninformed = 1/informed = 7; (c) unfriendly = 1/unfriendly = 7; (d) unqualified = 1/qualified = 7; (e) awful = 1/nice = 7; (f) reliable = 1/unreliable = 7; (g) virtuous = 1/sinful = 7; (h) intelligent = 1/unintelligent = 7; selfish = 1/unselfish = 7; (i) honest = 1/dishonest = 7; (j) pleasant = 1/unpleasant = 7; (k) inexpert = 1/expert = 7. Subjects were asked to circle the number between the adjectives that best represented their feelings about the credibility of news photography. Numbers 1 and 7 indicated a very strong feeling, numbers 3 and 5 indicated a fairly weak feeling, and number 4 indicated indecision or a lack of understanding for the adjectives themselves. The adjective pairs were randomly assigned to vary the positioning of positive and negative attributes to limit the possibility of subjects answering inappropriately. Because of the random assignment, the scales were re-coded before the alpha reliability test was
run to ensure that the scales were measuring attributes consistently and accurately. The re-coding procedure coded all positive attributes with a 1 and all negative attributes with a 7.

The data collected from the 172 subjects were analyzed using the Statistical Package for the Social Sciences (SPSS) computer software program. The results of the analysis of variance (ANOVA) with accompanying Scheffe test and Pearson Correlations are presented in Chapter 4 along with the results of Cronbach’s Alpha run on McCroskey’s Source Credibility Scale to determine reliability.
CHAPTER 4

RESULTS

Hypotheses 1 and 2 predicted that exposure to digital manipulation technology in the form of published examples of digitally manipulated images or to a videotaped demonstration of digital manipulation techniques would decrease viewers’ perceived levels of the credibility of news photography. Hypothesis 3 predicted that exposure to both the published examples and the videotaped demonstration would have the most significant effect on decreasing viewers’ perceived levels of the credibility of news photography.

In order to support Hypotheses 1 and 2, the pattern of results should reveal that subjects who either viewed the examples or viewed the videotape demonstration agreed more that the credibility of news photography is declining and that digital manipulation technology and techniques are causing or threatening the decline in the credibility of news photography than subjects in the survey group. In order to support Hypothesis 3, the pattern of results should reveal that the group that viewed both the examples and the videotape agreed the most that the credibility of news photography is declining and that digital manipulation technology and
techniques are causing or threatening the decline in the credibility of news photography than any other group.

Judgments made by 172 subjects about the credibility of news photography and about digital manipulation practice and technique were assessed using the Statistical Package for the Social Sciences (SPSS). An analysis of variance (ANOVA) with accompanying Scheffe test and a Pearson correlation were run to determine the differences between the means of the four treatment groups. McCroskey's 12-item Source Credibility Scale was also tested for reliability using Cronbach's alpha, a measure of internal reliability of the items in an index that indicates how much those items are measuring the same thing. The scale tested reliable and proved consistent and dependable as a research instrument with an alpha of $\alpha = .7851$ (See Appendix D for the inter-item correlation).

ANOVA

In Table 1, analysis of variance showed a significant difference between the four treatment groups for five of the thirteen statements posed to subjects in relation to the credibility of news photography and digital manipulation technology and technique. The next section summarizes these differences and also includes the significant results of the accompanying Scheffe test to show which groups the differences occurred between.

The first question to show significant difference was the one that asked if traditional photographic manipulation techniques (Traditional Techniques) such as
lightening or darkening areas, or touching up scratches are acceptable when completed digitally (F = 4.46, df = 3, p < .05). The Scheffe test showed that there was significant difference between the video/examples group and the survey group (mean difference = .64, p = .038). The video/examples group (μ = 2.20) agreed more with the acceptability of traditional manipulations completed digitally than did the survey group (μ = 2.84). The video group (μ = 2.24) approached significance with the same relationship to the survey group (μ = 2.84) as the video/examples group (mean difference = .60, p = .052).

The second question to show significant difference between groups was the one that asked if it is acceptable to digitally manipulate news photographs to add elements (Addition of Elements) such as subjects or objects (F = 3.56, df = 3, p < .05). The Scheffe test showed that there was significant difference between the video group (μ = 4.37) and the examples group (μ = 3.65), with the video group disagreeing the most that adding elements digitally was acceptable (mean difference = .72, p = .21).

The third question to show significant difference was the one that asked if it is acceptable to digitally manipulate news photographs to subtract elements (Subtraction of Elements) such as subjects or objects (F = 3.37, df = 3, p < .05). The Scheffe test showed that there was significant difference between the video group (μ = 4.04) and the examples group (μ = 3.40), with the video group disagreeing the most that it was acceptable to subtract elements digitally (mean difference = .64, p = .079).
Table 1

Analysis of Variance Between Groups

<table>
<thead>
<tr>
<th></th>
<th>Video/Examples</th>
<th>Video</th>
<th>Examples</th>
<th>Survey</th>
<th>F</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
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<tr>
<td>Accurate Reality</td>
<td>μ = 3.23</td>
<td>μ = 2.94</td>
<td>μ = 3.05</td>
<td>μ = 3.05</td>
<td>.712</td>
<td>3</td>
<td>.546</td>
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<td></td>
<td>sd = .733</td>
<td>sd = .880</td>
<td>sd = .975</td>
<td>sd = 1.07</td>
<td></td>
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<tr>
<td>Alteration of Original</td>
<td>μ = 3.65</td>
<td>μ = 3.76</td>
<td>μ = 3.51</td>
<td>μ = 3.70</td>
<td>.310</td>
<td>3</td>
<td>.818</td>
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<td></td>
<td>sd = 1.27</td>
<td>sd = 1.18</td>
<td>sd = 1.26</td>
<td>sd = 1.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional Techniques</td>
<td>μ = 2.20</td>
<td>μ = 2.24</td>
<td>μ = 2.70</td>
<td>μ = 2.84</td>
<td>4.46</td>
<td>.3</td>
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<td>sd = .908</td>
<td>sd = 1.06</td>
<td>sd = 1.07</td>
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<tr>
<td>Addition of Elements</td>
<td>μ = 3.98</td>
<td>μ = 4.37</td>
<td>μ = 3.65</td>
<td>μ = 3.86</td>
<td>3.56</td>
<td>3</td>
<td>.016*</td>
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<tr>
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<td>Change Colors</td>
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<td>sd = .958</td>
<td>sd = 1.01</td>
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<td>Technology Threatens</td>
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<td>μ = 2.07</td>
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Note. Items were rated on 5-point scales where 1 = strongly agree and 5 = strongly disagree. Significant at p < .05.
Table 1: Continued

Analysis of Variance Between Groups

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<tr>
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<th>Sig.</th>
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<td>$\mu = 2.23$</td>
<td>$\mu = 2.12$</td>
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<td>.747</td>
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<td>Speed Declines</td>
<td>$\mu = 2.23$</td>
<td>$\mu = 1.98$</td>
<td>$\mu = 2.44$</td>
<td>$\mu = 2.21$</td>
<td>1.50</td>
<td>3</td>
<td>.215</td>
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<tr>
<td></td>
<td>sd = 1.09</td>
<td>sd = .907</td>
<td>sd = 1.10</td>
<td>sd = 1.04</td>
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</tr>
<tr>
<td>Guidelines to Regulate</td>
<td>$\mu = 1.90$</td>
<td>$\mu = 1.98$</td>
<td>$\mu = 2.02$</td>
<td>$\mu = 1.77$</td>
<td>.531</td>
<td>3</td>
<td>.661</td>
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<tr>
<td></td>
<td>sd = 1.07</td>
<td>sd = 1.00</td>
<td>sd = 1.12</td>
<td>sd = .841</td>
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</tbody>
</table>

Note. Items were rated on 5-point scales where 1 = strongly agree and 5 = strongly disagree. Significant at $p < .05$.

The fourth question to show significant difference was the one that asked if it is acceptable to digitally manipulate news photographs to alter the placement (Alteration of Placement) of subjects or objects within the photograph ($F = 3.74$, df $= 3$, $p < .05$). The Scheffe test showed significant difference between the video group ($\mu = 4.04$) and examples group ($\mu = 3.42$) with the video group disagreeing the most that it was acceptable to alter the placement of elements in a photograph (mean difference = .62, $p = .046$).

The final question to show significant difference between groups was the one that asked if the credibility (Declining Credibility) of news photography is declining ($F = 3.05$, df $= 3$, $p < .05$). The Scheffe test showed significant difference between the video/examples group ($\mu = 1.90$) and the video group ($\mu = 2.50$) with the
video/examples group agreeing the most that the credibility of news photography is declining (mean difference = .60, p = .036).

The results of the ANOVA do not support Hypothesis 1 or Hypothesis 2, but they do offer a little support for Hypothesis 3. Although the difference between the video/examples group and the survey group is not significant for the statement that the credibility of news photography is declining, the video/examples group did have the highest mean agreement of all four groups.

Correlations

The results of the Pearson correlation provide several significant relationships between the concepts addressed in the survey relating to the credibility of news photography and digital manipulation technology. Several positive correlations indicated direct relationships between questions in the survey that support the subjects' views that the credibility of news photography is declining and that they disagreed with digital manipulation techniques. In a direct relationship, the amount of agreement or disagreement with questions increased or decreased in the same direction (Bordens & Abbott, 1996, p. 349). Negative correlations also existed between some questions, although their significance was not as strong as the positively correlated items. A negative correlation indicates an inverse relationship where, as the amount of agreement or disagreement increased for certain questions, the amount for other questions decreased (p. 349). Table 2 shows the Pearson Correlations for questions in the survey.
The following positively correlated relationships were found and demonstrate congruence of subjects' responses in relation to the credibility of news photography and digital manipulation techniques: (a) subjects who disagreed that altering an original image is acceptable also disagreed that it is acceptable to add elements \( (r = .628, p < .01) \), subtract elements \( (r = .568, p < .01) \), significantly change colors \( (r = .519) \), or alter the placement of subjects or objects in an image \( (r = .519, p < .01) \); (b) subjects who disagreed that it is acceptable to add elements to an image also disagreed that it is acceptable to subtract elements \( (r = .773, p < .01) \), significantly change colors \( (r = .539, p < .01) \), or alter the placement of subjects or objects in an image \( (r = .670, p < .01) \); (c) subjects who disagreed that it is acceptable to subtract elements also disagreed that it is acceptable to significantly change colors \( (r = .556, p < .01) \), or to alter the placement of subjects or objects in an image \( (r = .706, p < .01) \); (d) subjects who agreed or disagreed that it is acceptable to significantly change colors \( (r = .532, p < .01) \); (e) subjects who agreed that digital manipulation technology threatens the credibility of news photography also agreed that the awareness of digital technology causes a decline in the credibility of news photography \( (r = .685, p < .01) \), that the ease \( (r = .631, p < .01) \) and speed \( (r = .574, p < .01) \) of digital manipulation threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation \( (r = .414, p < .01) \); (f) subjects who agreed that awareness of digital manipulation technology causes a decline in the credibility of
news photography also agreed that the ease \( r = .633, p < .01 \) and speed \( r = .542, p < .01 \) of digital technology threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .256, p < .01 \);

(g) subjects who agreed that the ease of digital manipulation threatens the credibility of news photography also agreed that the speed \( r = .736, p < .01 \) of digital manipulation threatens credibility and that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .356, p < .01 \);

(h) subjects who agreed that traditional manipulation techniques were acceptable digitally also agreed that it was acceptable to significantly change colors \( r = .347, p < .01 \) and alter the placement of subjects or objects in an image \( r = .153, p < .05 \);

(i) subjects who agreed that the credibility of news photography is declining also agreed that digital manipulation technology threatens the credibility of news photography \( r = .475, p < .01 \), that awareness of digital technology causes a decline in the credibility of news photography \( r = .312, p < .01 \), that the ease \( r = .307, p < .01 \) and speed \( r = .246, p < .01 \) of digital technology threaten the credibility of news photography, and that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .212, p < .01 \);

(j) subjects who agreed that the speed of digital manipulation threatens the credibility of news photography also agreed that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .371, p < .01 \).

The following negatively correlated relationships were found and add further support to the result that all four groups agreed that the credibility of news photography also agreed that the ease \( r = .633, p < .01 \) and speed \( r = .542, p < .01 \) of digital technology threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .256, p < .01 \);

(g) subjects who agreed that the ease of digital manipulation threatens the credibility of news photography also agreed that the speed \( r = .736, p < .01 \) of digital manipulation threatens credibility and that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .356, p < .01 \);

(h) subjects who agreed that traditional manipulation techniques were acceptable digitally also agreed that it was acceptable to significantly change colors \( r = .347, p < .01 \) and alter the placement of subjects or objects in an image \( r = .153, p < .05 \);

(i) subjects who agreed that the credibility of news photography is declining also agreed that digital manipulation technology threatens the credibility of news photography \( r = .475, p < .01 \), that awareness of digital technology causes a decline in the credibility of news photography \( r = .312, p < .01 \), that the ease \( r = .307, p < .01 \) and speed \( r = .246, p < .01 \) of digital technology threaten the credibility of news photography, and that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .212, p < .01 \);

(j) subjects who agreed that the speed of digital manipulation threatens the credibility of news photography also agreed that guidelines should be placed upon news photographers to regulate digital manipulation \( r = .371, p < .01 \).
photography is declining and that they disagreed with most digital manipulation techniques: (a) subjects who agreed or disagreed that news photographs represent reality felt the opposite about the idea that the credibility of news photography is declining \( (r = -0.273, p < 0.01) \); (b) subjects who disagreed that it is acceptable to alter the original image agreed that the credibility of news photography is declining \( (r = -0.196, p < 0.05) \), that digital technology threatens the credibility of news photography \( (r = -0.304, p < 0.01) \), that the awareness of digital manipulation technology causes a decline in credibility \( (r = -0.416, p < 0.01) \), that the ease \( (r = -0.292, p < 0.01) \) and speed \( (r = -0.265, p < 0.01) \) of digital manipulation threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation \( (r = -0.228, p < 0.01) \); (c) subjects who disagree that it is acceptable to add elements agree that the credibility of news photography is declining \( (r = -0.174, p < 0.05) \), that digital technology threatens the credibility of news photography \( (r = -0.330, p < 0.01) \), that awareness of digital technology causes a decline in credibility \( (r = -0.364, p < 0.01) \), that the ease \( (r = -0.361, p < 0.01) \) and speed \( (r = -0.357, p < 0.01) \) of digital manipulation threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation \( (r = -0.328, p < 0.01) \); (d) subjects who disagree that it is acceptable to subtract elements agree that digital technology threatens the credibility of news photography \( (r = -0.277, p < 0.01) \), that awareness of digital technology causes a decline in credibility \( (r = -0.326, p < 0.01) \), that the ease \( (r = -0.300, p < 0.01) \) and speed \( (r = -0.316, p < 0.01) \) of
Table 2

Pearson Correlation for Questionnaire

<table>
<thead>
<tr>
<th></th>
<th>News Photos Represent Reality</th>
<th>Acceptable to Alter Original Image</th>
<th>Traditional Techniques are OK</th>
<th>Acceptable to Add Elements</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>1.00000</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0.628**</td>
<td>0.121</td>
<td>1.00000</td>
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<td>0.106</td>
<td>0.773**</td>
</tr>
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<td>Acceptable to Change Colors</td>
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<td>0.519**</td>
<td>0.347**</td>
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<td>0.519**</td>
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<td>Credibility of News Photography Declining</td>
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<td>-0.196*</td>
<td>0.052</td>
<td>-0.174*</td>
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<tr>
<td>Technology Threatens Credibility</td>
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<td>-0.304**</td>
<td>0.074</td>
<td>-0.330**</td>
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<tr>
<td>Awareness of Technology Threatens</td>
<td>0.036</td>
<td>-0.416**</td>
<td>0.126</td>
<td>-0.364**</td>
</tr>
</tbody>
</table>

Note. * Significance at p < .05; ** Significance at p < .01
Table 2: Continued

<table>
<thead>
<tr>
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<th>Traditional Techniques are OK</th>
<th>Acceptable to Add Elements</th>
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<td>.070</td>
<td>-.357**</td>
</tr>
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<td>.009</td>
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<th>Credibility of News Photography is Declining</th>
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Note. * Significance at p < .05; ** Significance at p < .01.

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Table 2: Continued

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<td>.475**</td>
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<td>-.246**</td>
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Note. * Significance at p < .05; ** Significance at p < .01
Table 2: Continued

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<th>Speed of Manipulation Threatens Credibility</th>
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<td>.631**</td>
<td>.633**</td>
<td>1.00000</td>
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<tr>
<td>Speed of Manipulation Threatens Credibility</td>
<td>.574**</td>
<td>.542**</td>
<td>.736**</td>
<td>1.00000</td>
</tr>
<tr>
<td>Guidelines to Regulate News Photographers</td>
<td>.414**</td>
<td>.256**</td>
<td>.356**</td>
<td>.371**</td>
</tr>
<tr>
<td>Age</td>
<td>-.171*</td>
<td>-156*</td>
<td>-.060</td>
<td>-.087</td>
</tr>
<tr>
<td>Guidelines to Regulate News Photographers</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.111</td>
<td>1.00000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly Newspaper/Magazine Readership</td>
<td>-.119</td>
<td>.120</td>
<td>1.00000</td>
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</tr>
</tbody>
</table>

Note. Significance at p < .05; ** Significance at p < .01

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digital manipulation threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation ($r = -.313, p < .01$); (e) subjects who disagreed that altering the placement of subjects or elements in an image was acceptable agree that digital technology threatens the credibility of news photography ($r = -.245, p < .01$), that awareness of digital technology causes a decline in credibility ($r = -.361, p < .01$), that the ease ($r = -.308, p < .01$) and speed ($r = -.247, p < .01$) of digital manipulation threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation ($r = -.277, p < .01$); (f) subjects who disagree that it is acceptable to significantly change colors agree that digital technology threatens the credibility of news photography ($r = -.187, p < .05$), that awareness of digital technology causes the decline of credibility of news photography ($r = -.281, p < .01$), that the ease ($r = -.274, p < .01$) and speed ($r = -.246, p < .01$) of digital manipulation threaten credibility, and that guidelines should be placed upon news photographers to regulate digital manipulation ($r = -.277, p < .01$).

McCroskey's Source Credibility Scale

The resulting credibility scores of McCroskey's 12-point credibility scale varied little between groups. Scores ranged from 12 to 74 with 12 representing high credibility ratings of news photography and 74 representing low credibility ratings of news photography. The range of scores was divided into equal thirds to show three degrees of credibility. High credibility ratings ranged from 12 to 31, moderate
credibility ratings ranged from 32 to 53, and low credibility ratings ranged from 54 to 74. Overall, 76.2% of subjects scored in the moderately credible range with a mean score of 46.16 and a mode score of 47. Only 6.9% of subjects scored news photography as highly credible, while 16.9% of subjects scored news photography in the low credibility range.

In addition to proving reliable and providing the range of credibility scores discussed, McCroskey's 12-item scale also proved highly correlated. Table 3 displays the Pearson Correlations for the scale showing that only 15 of the 66 correlations were not significantly, positively correlated.
### Table 3

**Pearson Correlation for McCroskey’s 12-Item Source Credibility Scale**

<table>
<thead>
<tr>
<th></th>
<th>Expert/</th>
<th>Friendly/</th>
<th>Honest/</th>
<th>Intelligent/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert/Inexpert</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendly/Unfriendly</td>
<td>.208**</td>
<td>1.00000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honest/Dishonest</td>
<td>.099</td>
<td>.373**</td>
<td>1.00000</td>
<td></td>
</tr>
<tr>
<td>Intelligent/Unintelligent</td>
<td>.290**</td>
<td>.205**</td>
<td>.238**</td>
<td>1.00000</td>
</tr>
<tr>
<td>Nice/Awful</td>
<td>.209**</td>
<td>.495**</td>
<td>.311**</td>
<td>.218**</td>
</tr>
<tr>
<td>Pleasant/Unpleasant</td>
<td>.203**</td>
<td>.313**</td>
<td>.379**</td>
<td>.332**</td>
</tr>
<tr>
<td>Qualified/Unqualified</td>
<td>.454**</td>
<td>.229**</td>
<td>.313**</td>
<td>.282**</td>
</tr>
<tr>
<td>Unselfish/Selfish</td>
<td>-.134</td>
<td>.316**</td>
<td>.336**</td>
<td>-.023</td>
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**Note.** * Significance at p < .05; ** Significance at p < .01

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Discussion

This quasi-experiment examined the potential influence of exposure to digital manipulation technology and published examples of digitally manipulated photographs on mass media consumers’ perceived levels of the credibility of news photography. Previous research by Reaves (1993) found that news photography editors who held the highest levels of intolerance for digital manipulation shared the characteristic of being familiar with digital manipulation technology. This quasi-experiment focused on media consumers rather than media practitioners, and hypothesized that exposure to digital technology practice and technique would elicit similar feelings of intolerance for digital manipulation resulting in a decline in viewers’ perceived levels of the credibility of news photography.

The results demonstrated no support for Hypothesis 1 and Hypothesis 2 which stated that exposure to published manipulation examples or a videotaped demonstration would decrease viewers’ perceived levels of the credibility of news photography. However, the results did provide trace support for Hypothesis 3
which stated that exposure to both the published manipulation examples and the videotaped demonstration would have the most significant effect on decreasing viewers’ perceived levels of the credibility of news photography.

The lack of difference between groups could have been limited by the size or composition of the study population, the nature of the published examples used, or the nature of the photographs and manipulation techniques used in the demonstration video. Another possibility explaining the lack of difference between groups is that, as subjects were exposed to digital manipulation practices and techniques, they felt confident that their awareness would guard them from being deceived. Exposure to digital manipulation technology and technique might also harden media consumers to the possible outcomes. If media consumers know these practices are occurring and how they occur, they might expect manipulation to some degree and subsequently dismiss the significance of digital manipulation’s effect upon the credibility of news photography.

Although there was not a significant difference between groups, a pattern emerged involving responses from the video group. The video group agreed the most that the ease and speed of manipulation threaten the credibility of news photography. The video group also disagreed the most that it was acceptable to add or subtract elements, alter the placement of subjects or objects in an image, or digitally manipulate photographs in any way that alters the original scene. If this pattern is indicative of a more significant relationship, then the effects of computer
literacy in programs like Adobe Photo Shop would be an important area for additional research into the credibility of news photography.

Regardless of the minimal support of the hypotheses tested, the results indicated a conclusion perhaps more critical to research on digital manipulation's effect on the credibility of news photography. All four treatment groups agreed that the credibility of news photography is declining and all four groups also agreed on the following factors in relation to the credibility of news photography: (a) digital manipulation technology threatens the credibility of news photography; (b) awareness of digital manipulation technology causes a decline in the credibility of news photography; (c) the ease with which images can be digitally manipulated threatens the credibility of news photography; and (d) the speed with which images can be digitally manipulated threatens the credibility of news photography. Additionally, all groups agreed that guidelines should be placed on news photographers to regulate the alteration of news photographs using digital manipulation technology.

Another dimension is added to the critical nature of the results by the evidence presented by McCroskey's scale in which subjects gave the credibility of news photography a moderate rating. Views of moderation are supported by the mean of all 172 (μ = 3.06) subjects for the statement that news photographs represent reality. The mean demonstrated that subjects neither agreed nor disagreed that news photography represented reality. These views might indicate that mass media consumers are at a transitional point in the regulation of their opinions on the
credibility of news photography. If mass media consumers are at a stage of holding moderate levels of belief in the credibility of news photography, but, they are not sure whether news photographs represent reality, yet they also believe that digital manipulation technology and techniques threaten or decline the credibility of news photography, then photojournalism is at a crucial juncture.

The overwhelming agreement between all groups about digital manipulation techniques, the credibility of news photography, and the desire for the enactment of digital manipulation guidelines makes it important to note the defining factors of the study population. The defining factors of the study population support the generalizability of the results to the broader population of mass media consumers.

First, the mean of all groups showed that subjects look at newspapers and magazines between three to four and five to six times a week, with the most frequent response being that they look at newspapers and magazines on a daily basis. This frequency of readership might exceed the readership of an average media consumer, but this characteristic is not viewed as a limitation to the research. On the contrary, increased readership might make the subjects' views more valuable because they are exposed more to news photography, thus more capable to speak of news photography's attributes. Second, the majority of subjects have no background or experience in photography or photojournalism, nor do they have any background or experience in scanning and manipulating photographic images digitally. Finally, despite their lack of knowledge of computer manipulation programs or techniques, the majority of subjects either own or have access to a
computer. Future research using random sampling techniques would be beneficial to determine if the study population played a determining role in the outcome of the results.

These defining characteristics of media consumers are an interesting contrast to Reaves' (1993) study involving editors in the mass media. The editors who held the highest levels of intolerance for digital manipulation shared two characteristics contrary to those shared by the media consumers. First, the intolerant editors were familiar with digital manipulation technology whereas media consumers were not. Second, intolerant editors possessed backgrounds as working photojournalists whereas media consumers had no background or experience in photography or photojournalism. This distinction supports the need for further research of media consumers because their intolerance for digital manipulation is not stemming from the same areas as media providers.

Conclusion

The studies and dialogue among media practitioners in the field of photojournalism discussed in Chapter 1 indicate that credibility in the digital age can be accomplished, or at least strengthened, through two main practices. First, the news media can limit the use of digital manipulation to alterations traditionally accomplished and accepted through non-computerized techniques such as burning and dodging. This view was supported in the research by subjects' disagreement of the acceptability of adding or subtracting elements, or altering the placement of
subjects or objects. Additionally, subjects agreed that traditional manipulation techniques were acceptable digitally supporting the news media’s use of traditional techniques digitally. Second, the news media can provide an obvious disclaimer for all images created as manipulated illustrations so the reader is not deceived. But, the studies and dialogue among media practitioners also indicate that these practices are not being followed consistently as evidenced by digital manipulations being published in publications such as *Time* and the *New York Newsday* without disclaimers.

In conclusion, the results of this study support and demand further research into the effects of digital manipulation on the credibility of news photography. Photography’s importance as a means of visual communication and documentation warrant research in a variety of areas. For example, research has been done to determine in what specific instances media practitioners will tolerate digital manipulation, but has not yet been done to determine in what specific instances media consumers will tolerate the manipulation of news photographs. An extension of this are would be to determine what signposts media consumers expect news organizations to provide with manipulated photographs. The results of this study indicated that media consumers believe guidelines should be placed upon news photographers to regulate digital manipulation. Researchers should attempt to determine what guidelines would be accepted and adhered to media wide by media practitioners.
A decline in the credibility of news photography caused by digital manipulation could impact not only the current world view of media consumers, but also how society values photographs in a historical context. Thus, researchers need to address the short-term and long-term effects that digital manipulation technology may have on how society views photography. The role of photography in the courtroom is one area that needs to be addressed. Digital manipulation has already become a debated issue in the legal field because digital technology questions the verity of photographs submitted as evidence. If photographs were banned from the courtroom, what effect would this have on our legal system?

The effects of digital manipulation technology on the credibility of mass media publications generally must also be assessed. Will a decline in the credibility of news photography cause an overall decline in the credibility of the mass media? Ultimately digital manipulation technology extends to any area where photographs reside as trusted artifacts of realities that we have believed for more than a decade exist or existed at some time. Thus, the research on digital manipulation technology’s effect on photography must extend to all the areas photography reaches.

Although the results did not support the Hypotheses that exposure to digital manipulation examples or technology would significantly affect media consumers’ views of the credibility of news photography, the trends that emerged indicate that the credibility of news photography is declining, and that digital manipulation technology and techniques will hasten the decline in credibility. Photojournalists...
have relied on the credibility granted to them by the nature of traditional photographic techniques that produce images that closely represent reality. With the erosion of this traditional standard of images that represent reality, photojournalists can either swim in digital “manipulation’s troubled waters” with little regard for future impacts, or they can choose to somehow work toward maintaining the historic precedent of reality (Traver, 1994, p. 6-7).
APPENDIX I

QUESTIONNAIRE

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
I am a graduate student in the Communication Studies program at UNLV requesting your participation in the experiment I am conducting for my master's thesis on digital manipulation of photographs. Digital manipulation is altering an image that has been put into digital form by using a computer and a software program. Your involvement in this study will consist of approximately twenty minutes during one class period. Your participation in this study is anonymous and entirely voluntary; you may withdraw from participation at any time. If you have any questions regarding this research you may contact me at 895-4636, or if you have questions regarding your rights as a research subject you may contact the Office of Sponsored Programs at 895-1357. Thank you for your time and cooperation.

To indicate your answer to the following questions, place a check mark or an “X” within the box next to your choice. Make sure that the mark that you place fits neatly within the boxed brackets and does not stray off into any other box. Remember that all of your answers are strictly confidential and will not be used for grading purposes, nor for anything other than academic research purposes.

1. How many times a week do you look at newspapers or magazines?
   1. [ ] 0
   2. [ ] 1-2
   3. [ ] 3-4
   4. [ ] 5-6
   5. [ ] daily

2. Do you have any background or experience in photography or photojournalism?
   1. [ ] yes
   0. [ ] no

PLEASE TURN THIS PAGE OVER AND CONTINUE ON THE BACK.
3. Do you own or have access to a computer?
   1 [ ] yes
   0 [ ] no

4. Do you have any background or experience in scanning photographic images into digital form?
   1 [ ] yes
   0 [ ] no

5. Do you have any background or experience in computer photographic manipulation programs such as Adobe Photoshop®?
   1 [ ] yes
   0 [ ] no

6. Your gender is
   1 [ ] female
   2 [ ] male

7. Your age is
   1 [ ] 16-20
   2 [ ] 21-25
   3 [ ] 26-30
   4 [ ] 31-35
   5 [ ] 36-40
   6 [ ] 41+

PLEASE TURN TO THE NEXT PAGE
For the following statements please circle the number that indicates the degree to which you agree or disagree with the statement.

8. News photographs are accurate representations of reality.

   Strongly Agree       Strongly Disagree
   1                   2
   3                   4
   5

9. It is acceptable to digitally manipulate news photographs in ways that alter the original image.

   Strongly Agree       Strongly Disagree
   1                   2
   3                   4
   5

10. Traditional photographic manipulation techniques such as lightning or darkening areas, or touching up scratches are acceptable when completed digitally.

    Strongly Agree       Strongly Disagree
    1                   2
    3                   4
    5

11. It is acceptable to digitally manipulate news photographs to add elements such as subjects or objects.

    Strongly Agree       Strongly Disagree
    1                   2
    3                   4
    5

12. It is acceptable to digitally manipulate news photographs to subtract elements such as subjects or objects.

    Strongly Agree       Strongly Disagree
    1                   2
    3                   4
    5

13. It is acceptable to digitally manipulate news photographs to significantly change colors.

    Strongly Agree       Strongly Disagree
    1                   2
    3                   4
    5

PLEASE TURN THIS PAGE OVER AND CONTINUE ON THE BACK.
14. It is acceptable to digitally manipulate news photographs to alter the placement of subjects or objects within the photograph.

Strongly Agree                      Strongly Disagree
    1  2  3  4  5

15. The credibility of news photography is declining.

Strongly Agree                      Strongly Disagree
    1  2  3  4  5

16. Digital manipulation technology threatens the credibility of news photography.

Strongly Agree                      Strongly Disagree
    1  2  3  4  5

17. Awareness of digital manipulation technology causes a decline in the credibility of news photography.

Strongly Agree                      Strongly Disagree
    1  2  3  4  5

18. The ease at which images can be digitally manipulated threatens the credibility of news photography.

Strongly Agree                      Strongly Disagree
    1  2  3  4  5

19. The speed at which images can be digitally manipulated threatens the credibility of news photography.

Strongly Agree                      Strongly Disagree
    1  2  3  4  5

20. Guidelines should be placed upon news photographers to regulate the alteration of news photographs using digital manipulation technology.

Strongly Agree                      Strongly Disagree
    1  2  3  4  5

PLEASE TURN TO THE NEXT PAGE
On the scales below, please indicate your feelings about the credibility of photography in newspapers and magazines. Circle the number between the adjacent adjectives which best represents your feelings about news photography. Numbers “1” and “7” indicate a very strong feeling. Numbers “3” and “5” indicate fairly weak feeling. Number “4” indicates you are undecided or do not understand the adjectives themselves. Please work quickly. There are no right or wrong answers.

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END
APPENDIX II

PUBLISHED EXAMPLES
The following are published examples of digitally manipulated photographs.

Please look at each example and read each caption, then complete the accompanying questionnaire.

Thank You.
One of the Pyramids of Giza was electronically moved in this February 1982 cover photograph for *National Geographic* so that the horizontal image would fit within the vertical format of the front cover's borders. Photographer: Gordon W. Gahan. (Original in Color)
This February 16, 1994, cover of the *New York Newsday* shows Tonya Harding and Nancy Kerrigan skating together the day before their scheduled Olympic match, an event that did not happen in reality. The image is a composite illustration of two separate photographs (following page) taken at different times combined through digital techniques. The text in the lower right labels the image as a composite illustration, but many readers were fooled by the image. Composite illustrator: Hayes Cohen.
The June 27, 1994, covers of both *Time* and *Newsweek* featured the mugshot of accused double murderer O.J. Simpson—with a difference. *Time*'s acknowledged photo-illustration digitally darkened Simpson's face. Photo-illustration by Matt Mahurin. (Originals in color)
Who's on First?

Power, perseverance and panic in Hollywood: The saga of the struggle to make "Rain Man" reveals the inner workings of a risky business.

Actors Dustin Hoffman and Tom Cruise were photographed separately in New York and Hawaii, (following page) and the two photographs were composited together. Neither the caption nor photo credit indicate that the image was not a conventional portrait.

Photographs by Douglas Kirkland, Newsweek, January 16, 1989 (Originals in color)
In pursuit of a less violent cover image, the shoulder holster and pistol actor Don Johnson (left) was wearing were electronically removed. Image by Deborah Feingold, *Rolling Stone*, March 28, 1985. (Original in color)
Despite having more than 235,000 photographs to choose from, the cover image of the best-selling *A Day in the Life of America* was electronically retouched from a horizontal photograph to a vertical image, "literally sliding the tree down the hill," according to an editor. The calendar's cover is the original, horizontal image. Images by Frans Lanting. (Originals in color)

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APPENDIX III

FRAMES FROM THE VIDEO DEMONSTRATION
Frame 1: Standard photograph

Frame 2: Teeth whitened
Frame 3: Horizontal Flip

Frame 4: Woman behind subject’s left shoulder erased using the cloning tool.
Frame 5: Second woman behind subjects right shoulder erased using the cloning tool.

Frame 6: Contrast and brightness levels adjusted.
Frame 7: Standard photograph (original in color).

Frame 8: Motion blur of entire image.
Frame 9: Motion blur of foreground cyclist only. Subject was selected using the lasso tool and then the motion blur effect was inverted so that all areas except the subject were blurred. Notice the delineation between subject and background.

Figure 10: Smudge tool was used to blur the delineated edges between the subject and the blurred background.
Frame 11: Twirl special effect.
APPENDIX IV

INTER-ITEM CORRELATION

Correlation Matrix for Reliability Analysis of McCroskey’s Source Credibility Scale

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**Note.** Reliability Coefficient for 12 items: Alpha = .7851
APPENDIX V

HUMAN SUBJECTS PROTOCOL
DATE: July 25, 1997

TO: Mara Evonne Vernon
M/S 5007 (COS)

FROM: Dr. William E. Schulze, Director
Office of Sponsored Programs (X1357)

RE: Status of Human Subject Protocol Entitled:
"The Credibility of News Photography in the
Digital Age"

OSP #381s0797-053e

The protocol for the project referenced above has been reviewed by the Office of Sponsored Programs and it has been determined that it meets the criteria for exemption from full review by the UNLV human subjects Institutional Review Board. This protocol is approved for a period of one year from the date of this notification and work on the project may proceed.

Should the use of human subjects described in this protocol continue beyond a year from the date of this notification, it will be necessary to request an extension.

If you have any questions regarding this information, please contact Marsha Green in the Office of Sponsored Programs at 895-1357.

cc: B. Cloud (COS-5007) OSP File
REFERENCES


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VITA

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Kappa Tau Alpha, Top Scholar Award, 1993, NAU
Outstanding Photojournalism Graduate, 1993, NAU
Award for Outstanding Scholarship & Deans Honor List 1989-1993, NAU
Golden Eagle Award for Outstanding Scholarship, Tennis, 1989-90, NAU
Big Sky Conference All Academic Team, Tennis, 1989-90, NAU

Thesis Title: The Credibility of News Photography in the Digital Age

Thesis Examination Committee:
Chairperson, Dr. Barbara Cloud, Ph.D.
Committee Member, Dr. Richard Jensen, Ph.D.
Committee Member, Dr. Lawrence Mullen, Ph.D.
Graduate Faculty Representative, Dr. Pasha Rafat, Ph.D.