Effect of Source Clarity on the Judgment of Facially Expressed Emotions in Context

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DEDICATION

I dedicate this work to my parents, Joe and Brenda Kitchens,

and to my siblings, Christopher, Jonathan, Kathryn, and David,

because of their continued love

and

support throughout my education.

Thank you.

This work is also dedicated to my wife, Jenny,

who provided the inspiration and encouragement I needed to continue.

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ABSTRACT

Exploring the recognition of facial expressions in context has raised complex methodological concerns, which include issues of source clarity (whether the emotional message conveyed by the face or context is clear to the perceiver) and mode of presentation (whether context information is presented visually or narratively). This study tested whether the clarity (high vs. low) of the expression and context, as well as the mode of presenting the context (picture vs. narrative) affected observers' ability to identify the emotion message. Results revealed that observers were able to accurately identify high-clarity expressions of emotion, regardless of the situation's clarity or mode of presentation. This work suggests that observers rely on facial information when deciphering an emotion.

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Chapter I

Introduction

Intuitively, the face is seen as an external expression of an internal, emotion state. After all, anyone knows that a smiling face is characteristic of a happy person, while a scowl is characteristic of an angry person. Simply stated, common sense and experience tell us that we know how someone feels from the expression on their face. For example, imagine walking into a room and finding someone in tears. We would assume that this person is sad because the face provides us with the needed emotion information. Researchers (e.g., Ekman 1992a, 1992b; Izard, 1992; Panksepp, 1992) have, in fact, found empirical support for our intuition, suggesting that facial expressions are innate and distinct to one emotion. Moreover, each of these unique expressions has been found to be universally recognized across cultures (Ekman, 1994; Keltner & Ekman, 2000).

However, other researchers (e.g., Fernandez-Dols & Carroll, 1997; Frijda, 1969; Russell, 1994) have concluded that the recognition of emotion is far more complicated than this. Specifically, they have questioned the universal recognition of isolated expressions and proposed that the context in which the facial behavior occurs plays an essential role in the recognition of the emotion message. Again, imagine walking into a room and finding someone in tears, but now imagine that the room you walked into is a large banquet-room, and the person crying is holding a coveted award for some accomplishment. Certainly, this situation has made you change your mind regarding the

tears. This person is overcome with happiness due to receiving recognition for an accomplishment.

In sum, even though it may be intuitive to place the weight of the emotion message exclusively in the face, the recognition of emotion is far from a simple matter. Often, it appears that the context plays a part in our interpretation of the expression of emotion. Thus, the focus of much of the research over the years has been geared toward how an observer uses these two sources of information when judging an emotional expression. Moreover, resulting from this research, several complex methodological concerns have been raised. These concerns, which include source clarity (i.e., whether the emotion message conveyed by the face or context is clear to the perceiver) and the mode of presentation (i.e., whether the situation is presented visually or narratively), have been suggested to be responsible for the inconclusive findings in this area.

Facial Expressions as Universal Signatures of Emotion

The previous example is not meant to imply that the face contains no emotion information, but only to suggest that the context could play a role in determining how an observer infers an emotional experience. In fact, for over 130 years, researchers have studied the face as *the* emotion messenger to the observing world. In Darwin's (1872/1965) *The Expression of Emotion in Man and Animals,* he posited that facial expressions are an evolutionary adaptive behavior that were passed on for the purpose of a universal, external signal of an internal, emotion state. He proposed that these signals were functional, adaptive, and served a vital purpose for survival in our evolutionary

history. He supported his theory through observations, where he found similarities between humans and animals in their expressive behavior.

Resulting from this functional approach to emotions, several researchers (e.g., Ekman, 1992a, 1992b; Plutchik, 1980; Tomkins, 1962) proposed that a limited number of emotions (happiness, anger, disgust, fear, surprise, and sadness) known as *basic emotions* were biologically "hard-wired" to be experienced, expressed, and recognized.[1] Furthermore, converging evidence from diverse branches within psychology has, in fact, found empirical support for this idea. For example, Izard and Ackerman (2000), who have approached this topic from a developmental perspective, provided evidence that these emotions emerge early in life as distinct emotions, thus suggesting that they are genetically inherited. Panskepp (1992) explored the biological nature of these emotions, finding evidence that each is associated with distinct physiological markers, further supporting the "hard-wired" nature of these emotions. Other evidence (e.g., Izard, 1992) has suggested that each of these emotions is associated with a unique set of cognitions and behaviors, thus stressing their functional nature.

Ultimately, a varied program of research has concluded that a limited number of emotions are distinct and innate. As specific evidence for the recognition of these expressions, several studies (e.g., Bimler & Kirkland, 2001; Etcoff &Magee, 1992; de Gelder, Teunisse, & Benson, 1997) have demonstrated that variations in the expression of these emotions were recognized by observers as belonging to their respective category of emotion. For example, in one such study, Young et al. (1997) showed digitally altered

[1] There is some disagreement amongst researchers through the years as to the actual number and list of basic emotions, but these emotions listed are the most commonly agreed upon basic emotions (see Ortony & Turner, 1990, and Turner & Ortony, 1992 for extensive discussions regarding this disagreement).

expressions to observers in several stages as the expression changed from one emotion to another emotion. So, as the face slowly changed from expressing anger to happiness, observers were able to distinguish these expressions as belonging to its respective category of emotion. Furthermore, evidence for the *universal* recognition of emotion came from Ekman and Friesen (1971), who conducted a study with a preliterate New Guinea tribe. Participants from the tribe had never been exposed to Western facial expressions, but, in spite of their lack of experience with such expressions, they were able to recognize these expressions accurately. Furthermore, their results were comparable to participants who had been exposed to Western facial expressions. Thus, the data further supported the idea that the ability to recognize facial expressions of emotion is innate, and the findings uniquely contributed to the literature by empirically supporting the universal recognition of facial expressions.

In sum, Darwin's work was important in initiating a great deal of research, and the work that followed supported his hypothesis that the expression of emotion is distinct, innate, and universally recognized. This has been especially supported for a small set of emotions known as basic emotions, and the study of these emotions has stood strong on its converging empirical evidence—developmentally, biologically, and cognitively.

Empirical Evidence for the Influence of Context

On the other side of this debate, many researchers (e.g., Frijda & Tcherkassof, 1997; Fernandez-Dols & Carroll, 1997; Russell, 1997) have suggested that the context is a powerful influence in recognizing an expression of emotion. Evidence of this has been shown, in part, through several studies (e.g, Russell, 1991a; Russell & Bullock, 1986;

Tanaka-Matsumi, Attivissimo, Nelson, & D'Urso, 1995), which demonstrated that expressions of emotion were vulnerable to interpretation when viewed relative to each other. For example, Russell and Fehr (1987) showed that a moderately sad expression could be interpreted as either sad or angry, depending on the expression it was presented alongside.[2] Thus, these studies demonstrate that even identifying expressions of basic emotions could be effected by the context.

Furthermore, in a series of studies, Landis (1924a, 1924b, 1929) provided evidence that suggested context information is *needed* to interpret facial expressions. Specifically, Landis (1924a) photographed facial reactions to emotionally eliciting events, which included viewing nude photos or receiving an electrical shock. Using these photographed expressions, Landis found that there was no prototypical expression of emotion to any one situation; moreover, participants were unable to identify such naturally occurring expressions out of context (Landis, 1929). These findings suggest that because no situation created one facial expression, it is likely that no *one* expression is prototypical of an emotional reaction. Also, because such naturally occurring expressions were unable to be identified out of context, observers must rely on the situation rather than the face to identify the emotion message. Furthermore, Landis' situations were unique in that they were actual events in which participants' reactions were recorded.

Sherman (1927) also conducted similar studies using infants. Specifically, he had observers view infants' facial and behavioral reactions to such emotionally eliciting events as being pricked with a needle or being suddenly dropped. Some of these

[2] This issue of relativity in the recognition of emotion has not gone without debate. Most of the arguments are based on methodology and the theoretical framework of emotion itself (see Ekman & O'Sullivan, 1988; Ekman, O'Sullivan, & Matsumoto, 1991; Russell, 1991b; Russell & Fehr, 1988 for a comprehensive look at these arguments).

observers viewed the infants' reaction in context (i.e., they observed the emotionally eliciting event followed by the infant's reaction); whereas, others only observed the reaction (i.e., they observed the infant's facial and behavioral reaction without viewing the emotionally eliciting event). Observers who saw the reaction in context were more accurate in identifying the infant's emotion than those who saw the reaction in isolation. Thus, Sherman concluded that observers' accuracy in identifying the emotion displayed depended more on the information provided by the situation rather than by the face.

In sum, there is compelling evidence that contradicts the idea that facial expressions are *the* signals of emotion. Specifically, empirical evidence has suggested that the situation in which the expression of emotion takes place influences an observer's recognition of the emotion message. This idea is compelling not only because such effects have been found to occur in the lab, but because this is the way one views facial expressions of emotion outside the lab—in context.

The Goodenough and Tinker Design and the Mode of Presentation

One of the early studies exploring the judgment of facial expressions of emotion in context was conducted by Goodenough and Tinker (1931). In this study, four pictures of actors displaying the emotional expressions of fear, anger, sympathy, and disgust were presented along with four written descriptions of situations representing the same four emotions. Each of the pictures was paired with each of the written contexts making a total of 16 combinations. Four of these combinations were concordant pairs, while the remaining 12 combinations were discordant pairs. Concordant pairs represented face and context stimuli that match or concur in the emotion message, while discordant pairs

represent face and context stimuli that do not match or have opposing emotion messages. Each participant received one set of pictures and context stories, which included one picture/context combination that was concordant and three picture/context combinations that were discordant. The participants were then asked to identify the emotion expressed by the actor displaying the emotion, while imagining them in the situation.

Ultimately, this study is important to this area of research because several studies (e.g., Carroll & Russell, 1996; Fernandez-Dols, Carrera, & Russell, 2002; Knudsen & Muzekari, 1983; Spagnesi & Shor, 1980; Watson, 1972) have mimicked its design. In fact, many of these studies differed little from Goodenough and Tinker's design, which combined visual representations of the face with written descriptions of the context in order to determine which source carries the weight of the emotion message. However, because visual representations of the face were paired with narratives used to describe the situation, researchers began to be concerned with whether the situation was adequately represented. Perhaps facial expressions displayed in photographs are simply more vivid representations of the emotion message, as opposed to written descriptions of the situation. Thus, findings that supported a facial dominance pattern (e.g., Watson, 1972) could have been due to the representation of the stimuli rather than the way one may naturally identify an emotion.

In order to minimize this concern, many researchers began to use visual representations of the context as opposed to written descriptions of the context. For example, Munn (1940) had participants identify the emotion being expressed by the actor in the photographs selected from *Life* and *Look* magazines. Each of these photographs contained a person expressing an emotion in context. Munn used this type of stimulus

presentation in order to realistically represent the situation, as well as to present the situation in the same manner as the face—in a photograph. Other researchers (e.g., Wallbott, 1988a) used motion pictures or videos in order to create realistic and equal representations of the situation. For example, Goldberg (1951) presented film clips to participants in which the last scene of this film, containing an actor displaying an emotion, was always the same, but the context preceding this last scene of the actor was altered to display one of two different contexts.

Thus, due to the concern over Goodenough and Tinker's unequal representation of the stimuli (i.e., photographs of expressions and written context), an interesting question begs to be asked: Does such equal and realistic representation matter in exploring this relationship? That is, are observers influenced more when the situation is presented in the form of a picture as opposed to being described in a narrative?

In order to empirically explore which mode of presenting the situation was better, Wallbott (1988b) designed a study, in which he used both modes of presentation for the situation (i.e., situations presented in pictures and situations described in narratives). Specifically, in this study facial expressions were accompanied by written descriptions of situations, and expressions were combined with situations presented in pictures. The results suggested that the situation had more of an influence when it was presented in the form of a picture as opposed to being described in a narrative. These finding have important implications for studies that did not use visual stimuli, and still have powerful implications for the way situation information should be displayed in face-context judgment studies. In fact, this study forces one to question previous findings. Perhaps the only reason facial expressions have appeared to be a more powerful displayer of emotion

is due to the fact that both sources of information were not equally presented. Thus, when both face information and situation information are presented in the form of pictures, the weight of the emotion message provided by the situation is truly revealed. However, a closer look at Wallbott's study shows that the situations used cannot be compared because the situations presented in the pictures were not the same situations described in the text-scenarios. The situations described in the text-scenarios were selected from a previous study where participants wrote about real experiences they had. On the other hand, the situations presented in pictures were selected from newspapers and magazines. Perhaps the situations presented in the pictures did make the emotion message in the situation more powerful, or perhaps the situations presented in the pictures were simply more emotionally powerful than the situations described in the text-scenarios.

Ultimately, this study does not leave us with any clear answer as to what mode of presentation has more influence on an observer's ability to identify an emotion message, yet this question is an empirical one and should be answered. After all, the idea of presenting the situation in the form of a picture is to create a design that realistically captures an observer's natural process of identifying an emotion message beyond the lab. Therefore, it is of interest to see if a visual representation of the situation is truly a better representation of the emotion message provided by the situation in lab studies.

Methodological Concerns

Beyond the methodological concerns regarding the mode of presenting the situation, Carroll and Russell (1996) have raised several other concerns, which they argued could have influenced the outcome of face-context studies. First, they criticized

the typically limited number of emotion labels participants had been given to choose from when identifying the emotion message. Much of the past research (e.g., Frijda, 1969; Wallbott, 1988b) has concluded that deciphering the emotion message from the face in context is an elaborate and dynamic process. So, it is puzzling why studies have included only certain emotions, as if an observer would only choose from a select group of emotions for such a dynamic process. Second, they criticized the typical within-subjects design used in these studies. That is, often, participants have seen the same face in different situations or the same situation with different expressions. Due to seeing only one piece of information changing, participants could have based their perception of the emotion on this dynamic piece, instead of using what may be a more natural process of looking at either both sources or the piece that does not change. Third, they criticized the use of discordant combinations. That is, often, participants were presented with face and context stimuli that did not match in terms of the emotion message. Participants were then left to wonder why someone was smiling in an obviously sad situation (e.g., a funeral). They proposed that the participants have been forced to ignore situation information, inferring that information was missing in the description of the situation.

Another concern addressed in the literature was done so by Ekman, Friesen, and Ellsworth (1982). In their review of the literature, they argued that the emotion presented in the face and the situation should be equally clear to an observer, and they noted that this issue has not been addressed in past research. They suggested that when an observer views a face with a clear emotion message combined with a context that does not clearly represent an emotion, the observer is likely to base his or her decision on the face. Thus, this type of judgment strategy could be the natural tendency for observers (i.e., to identify

the emotion presented in the face as opposed the situation) or this type of judgment strategy could simply be due to the unequal presentation of the two sources (i.e., the face portrays the emotion clearer than the situation). Therefore, Ekman et al. outlined the criteria for how a stimulus should equally present the emotion it represents. They defined this as *source clarity* and operationalized it in terms of three properties: ambiguity, message complexity, and strength. Ambiguity was defined as "the extent of agreement among observers about the presence or likelihood of a single emotion in terms of category judgments or the variance in their judgments if an emotion dimension task is used" (p. 115). In other words, high-clarity emotions would have a large proportion of participants agree upon the emotion perceived in the stimuli. Message complexity was defined in terms of "whether a single or blend of emotions is observed" (p. 115). In other words, a high-clarity stimulus would be characterized by a single emotion being present; whereas, a low-clarity emotion would be characterized by a blend of expressed emotions or a partial expression of emotion. Strength was "measured by the intensity of the emotion observed, disregarding or holding constant the judgment about the nature of the emotion" (p. 116). Therefore, high-clarity stimuli would be more emotionally intense than low-clarity stimuli.

These criteria seem like reasonable standards regarding source clarity for facial expressions. However, Fernandez-Dols, Wallbott, and Sanchez (1991) found evidence to suggest that we do not label situations in the same way we do expressions, thus source clarity as Ekman et al. (1982) define it should be altered for determining the situation's emotion clarity. Fernandez-Dols, Sierra, and Ruiz-Belda (1993) addressed this issue by providing three criteria for determining the situation's emotion clarity: identity of the

emotion, prototypicality, and intensity. The identity criterion, which is similar to Ekman and colleagues' ambiguity criteria, was described as an observers' ability to identify an emotion from the situation. Prototypicality was characterized by situations that clearly represented a context for that particular emotion to take place (e.g., a graveyard is a representative situation for sadness to take place). Finally, intensity is defined as Ekman et al. define it. Therefore, taking into consideration Ekman et al.'s (1982) and Fernandez-Dols et al.'s criteria, it seems reasonable that source clarity of the situation can be determined by relying on observers' perception of the emotion being displayed and their perception of the intensity of that emotion, as well as by taking into consideration the prototypicality of the situation.

Ultimately, source clarity has been an important variable that researchers (e.g., Nakamura, Buck & Kenny, 1990; Watson, 1972) have considered when studying the situation's influence on the judgment of facial expressions of emotion, but designs used to manipulate source clarity have been criticized because of the unequal mode of presenting the situation (i.e., photographed expressions and context narratives). Therefore, one would have to question whether the stimuli could have ever been truly equal in clarity due to the unequal mode of presenting the stimuli. Therefore, it is important to (a) manipulate source clarity in order to determine if clarity of the emotion in the face and clarity of the emotion in the context is a variable that alters one's interpretation of the emotion message and (b) explore whether visual representations of the context are better representations of the situation than written descriptions of the situation.

Rationale for the Proposed Study

One issue not specifically addressed to this point is whether past studies have come to any conclusion(s) about which source (i.e., the face or the context) observers use to interpret the overall emotion message. Ultimately, no clear conclusions have been made because the findings are often contradictory. Of course, there is a broad literature supporting universal recognition of emotion in the face when it is presented in isolation (Ekman, 1994; Keltner & Ekman, 2000), but when faces are placed in context, there is still empirical evidence supporting that the face is the dominant source of the emotion message (e.g., Watson, 1972). On the other hand, empirical evidence suggests that the situation is influential in deciphering the emotion message (e.g., Cupchik, & Poulos, 1984). In order to make sense of this complicated interplay of facial expressions and context and the contradictory findings in this area of research, elaborate theories have been posed (e.g., Frijda, 1958, 1969; Wallbott, 1988b), but, ultimately, the conclusion is that both sources of information are important. There is simply theoretical disagreement on the amount each source contributes (see Ekman & O'Sullivan, 1988; Russell & Fehr, 1988 for arguments regarding face dominance and situation dominance, respectively). Thus, it becomes important to explore how an observer uses the face combined with a situation to infer the emotion message. Specifically, it becomes of interest to explore both when and how the situation contributes to the emotion message in the face. One way of exploring this would be to manipulate the clarity of the emotion displayed in the face and the clarity of the emotion reflected in the situation. As noted, source clarity has been manipulated in a way that does not consider equal presentation of the stimuli (i.e., photographs of expressions and situations). This concern has been raised by researchers

(e.g., Carroll & Russell, 1996), but there have been no studies done in which source clarity was manipulated using comparable stimuli (i.e., photographs of expressions and situations). However, along this same line, many studies (e.g., Munn, 1940; Wallbott, 1988a) have *assumed* that situations presented in pictures are better representations of the situation than the typical narrative descriptions of the situation, but this hypothesis lacks solid empirical support.

Therefore, in order to explore these questions, two studies were conducted. The purpose of the first study was simply to select stimuli (i.e., expressions and situations) that were perceived to be high and low in source clarity. Specifically, participants individually viewed actors displaying a number of facial expressions and situations presented in either the form of a picture or a text-scenario. For each of the stimuli presented, participants identified the emotion they perceived it to display, rated the intensity of that emotion, and rated their confidence in these judgments. The purpose of the second study was to explore the effect that source clarity for the face and source clarity and mode of presentation for the situation had on participants' ability to identify the emotion message of facial expressions in context. In order to do this, participants saw actors displaying facial expressions manipulated for source clarity (high vs. low) combined with situations manipulated for source clarity (high vs. low) and the mode of presentation (pictures vs. text). For each of the stimuli presented, participants made the same three judgments as previously described. Moreover, the present work addressed the concerns outlined by Carroll and Russell (1996). Specifically, participants viewed the stimuli using equal modes of presentation (i.e., faces presented in pictures and situations presented in pictures). Second, participants where given alternative choices to the

typically used six basic emotion labels in order to identify the emotion displayed. Russell (1993) has suggested that giving participants only a limited number of emotion label choices forces participants to identify a stimulus as an emotion that they may not detect or choose an emotion that they do not perceive is presented. Therefore, *none of these,* as suggested by Frank and Stennett (2001), and *I don't know,* as suggested by Wagner (1997), were given as alternative labels in order to give participants a choice when they either identified an emotion that was not given as a choice or when they could not identify an emotion in the stimulus. Third, the design was a between-subjects design, as opposed to the typically used within-subjects designs that were criticized by Carroll and Russell. Fourth, discordant combinations were not used. That is, the emotions conveyed in the faces were the same emotion reflected in the situations.

In sum, many researchers have proposed that there are several methodological concerns that may have affected the results of past studies. Due to the inconsistencies in the findings of past studies, such a conclusion seems plausible. Thus, the present work addresses several of these concerns that have been assumed to alter the findings of past studies. In particular, the present work explores the effect of source clarity and mode of presentation, as well as addressing several concerns identified by Carroll and Russell (1996).

Hypotheses

It was expected that regardless of the situation's clarity (high vs. low) or mode of presentation (picture vs. text), participants would be able to accurately identify the emotion message in high-clarity expressions. However, it was expected that when the

face was low in clarity, participants' accuracy would be affected by the situation's source clarity. Specifically, it was expected that participants would be able to identify the low-clarity facial expression when the situation was high in clarity.

In terms of intensity and confidence ratings, a three-way interaction was expected. Specifically, it was expected that participants would perceive high-clarity expressions combined with high-clarity picture-situations to display the most intense emotions and participants would be most confident in their judgments of these stimuli. On the other hand, it was expected that participants would perceive low-clarity expressions combined with low-clarity text-scenarios to display the least intense emotions, and participants would be least confident in their judgments of these stimuli.

Finally, it was of interest to compare intensity and confidence ratings of the face in isolation to the intensity and confidence ratings of the face in context. It was predicted that intensity ratings and confidence ratings would increase when the facial expression was viewed in context as compared to when the facial expression was viewed in isolation. After all, participants were expected to have more emotion information, thus, perceive more intensity for the emotion expressed and being more confident in their judgments of these expressions.

Chapter II

Study 1

Method

Participants

Participants ($N = 89$) were undergraduates at the University of Mississippi enrolled in introductory psychology courses. They received partial course credit for their participation. Information regarding participants' gender was not collected. Participants were randomly assigned to view half of the stimuli.

Stimuli

Facial stimuli were selected from a subset of Matsumoto and Ekman's (1988) Japanese and Caucasian Facial Expressions of Emotion and Neutral Faces photographs. These pictures were presented to participants in black-and-white. These pictures were photographs of complete expressions of six emotions (*happiness, anger, disgust, fear, surprise,* and *sadness*). A complete expression of emotion is characterized by a prototypical expression of an emotion. For example, a prototypical expression of anger is characterized by the brows being drawn together while the eyes stare intensely ahead, and the angry mouth is characterized by either tightly closed lips or an opened squared mouth bearing teeth (Ekman & Friesen, 1975). These six emotions that were expressed by four Caucasian actors (two male and two female) were expected to represent high-clarity expressions because high-clarity stimuli are characterized, in part, by a complete

expression of emotion. The pictures used were also photographs of partial expressions of emotion, which were produced by digitally altering complete expressions so that a portion of a complete expression (e.g., top two-thirds of the face expressing anger) was combined with a portion of a neutral expression (e.g., bottom third or mouth). Essentially, these stimuli were photographs of actors displaying two-thirds of a complete expression, while the rest of the expressions were neutral. These expressions were expected to represent low-clarity expressions because, according to Ekman et al.'s (1982) criteria for source clarity, low-clarity stimuli do not possess one clear emotion. Thus, it was expected that an incomplete or partial expressions would be lower in emotion clarity. A total of 24 complete expressions and 34 partial expressions were selected to be viewed by the participants. More partial expressions were presented in order to ensure that there would be an ample number of expressions that participants would be unable to identify, which would then be characterized as low-clarity expressions.

Situation stimuli were selected from the International Affect Picture System (IAPS; Lang; 1999). These pictures of situations were presented to participants as black-and-white photographs. The IAPS photographs were normed on dimensional ratings of arousal and valence. The arousal dimension rating ranges from 1 (c*alm*) to 9 (*excited*). The valence dimension ranges from 1 (*unhappy*) to 9 (*happy*). Using these ratings, 24 neutrally-valenced situations and 24 emotionally-valenced situations were selected. The 24 neutral situations, which were selected from arousal ratings ≥ 3 and ≤ 6 and valence ratings ≥ 4 and < 7, were expected to represent low-clarity situations because the emotional clarity would be less intense from these "middle-range" ratings. The 24 emotionally-valenced situations, which were selected using the extreme ends of the

arousal and valence dimension ratings, were expected to represent high-clarity situations because the emotion clarity would be more intense. These situations were also selected in order to match the emotional valence of the emotions represented in the complete facial expressions. Therefore four positively valenced emotion situations (arousal ratings ≥ 4 and ≤ 8 and valence ratings ≥ 7) were selected to match the happy emotional expressions. Sixteen negatively valenced situations (arousal ratings ≥ 4 and ≤ 8 and valence ratings ≤ 3) were chosen in order to match the 16 negatively valenced emotional expressions (i.e., four anger expressions, four disgust expressions, four fear expressions, and four sad expressions). Also, four pictures were chosen which were considered to be neutrally valenced (greater than 4 and less than 6) but considered to be high in arousal (i.e., greater than 6) in order to match the surprise expression. Surprise is not valenced positively or negatively, but high in arousal (Russell, 1980). Beyond the valence and arousal ratings, situations were selected on the basis that they could be manipulated for stimuli when the facial expressions would be embedded in the picture-situations.

Actors in these photographs were removed whenever they were going to be used as the actor's body in the following study, where facial expressions would be embedded in these situations. This was done so that participants would view the photographs (i.e., the situations) exactly as they would be presented in the following study, except here, absent of the "target-actor" expressing the emotion. These situations were also written as short narratives, in order to create the text-scenarios.

Procedure

Participants were run in small groups of 5 to 17 in a large classroom. They were separated from one another, at least, by an aisle to each side and a desk in front and

behind them. Participants were asked to refrain from talking so that no one would be distracted during the entirety of the study, and an experimenter was present in order to further inhibit any distractions. Once participants were seated, they received consent forms and were informed that they were going to view several slides containing faces and situations in three different parts during this study. Participants rated half of each type of stimuli (i.e., 17 faces, 12 text-scenarios, and 12 picture-situations), and the order of the stimuli types was randomly presented. Participants saw half of the stimuli so that the same situation that was presented in the form of a text was not the same situation that was presented in the form of a picture. This was done in order to prevent participants' perception of the situation presented in one form (e.g., in a text-scenario) to affect their perception of the situation presented in the other form (e.g., in a picture-situation).

When participants viewed actors displaying facial expressions of emotion, they received ratings sheets and then heard an audible cue (i.e., the experimenter's verbal prompt to begin) and saw a visual cue (i.e., a red cross projected on a screen in the front of the room for 1 s) in order to indicate that they were to begin their judgments of each of the facial expressions. Participants then viewed an actor displaying an expression of emotion. This image was projected on a screen in the front of the room for 10 s. After looking at the facial expression, participants indicated which emotion they perceived the person to be experiencing by circling the appropriate label (i.e., *happiness, anger, disgust, fear, surprise,* and *sadness, none of these, and I don't know*) on their rating sheet. They also indicated how intensely they perceived the person to be experiencing that emotion and how confident they were regarding these judgments by marking a hash on the appropriate lines on their rating sheet. The rating sheet contained an intensity

dimension and a confidence dimension that measured 620 mm in length and ranged from *not at all intense* to *extremely intense* and from *not at all confident* to *extremely confident*, respectively. A total of 29 facial expressions (12 complete expressions of emotion and 17 partial expressions of emotion) were individually presented. Between each facial expression, participants were cued both visually (i.e., a red cross appeared on the screen for 1 s) and audibly (i.e., the experimenter said "next slide") that the stimulus was about to be presented.

When participants viewed text-scenarios, they received identical rating sheets. They then viewed and rated the stimuli just as they did with the facial stimuli, except that they viewed the text-scenarios for 13 s, as opposed to 10 s. Participants viewed the stimuli longer in order to allow them adequate time to read the situation described as opposed to simply looking at a picture. A total of 24 text-scenarios were individually presented (12 emotionally valenced and 12 neutrally valenced).

When participants viewed picture-situations, they received identical ratings sheets. They then viewed and rated the stimuli just as they did with the facial stimuli. The only difference was that participants indicated which emotion they perceived to be *reflected* in the situation as opposed to *experienced by the person* as before because often there was no person in the situation. A total of 24 picture-situations were individually presented (12 emotionally valenced and 12 neutrally valenced). Once participants completed this final task, the experimenter collected their ratings sheets, explained the experiment, and thanked them for their participation.

Results and Discussion

Face Clarity

High-clarity expressions were selected based on Ekman et al.'s (1982) three criteria for source clarity—specifically, that it displayed one emotion (message complexity), that it had a consensus agreement amongst observers as to what emotion was being displayed (ambiguity), and that the emotion was intense (intensity). The complete expressions of emotion used as stimuli displayed one emotion, thus high-clarity expressions were selected from these faces (i.e., message complexity criterion). When the majority of participants (i.e., greater than or equal to 66%) agreed that the emotion expressed in these complete expressions was one of six emotions, the face was considered to be high-clarity (i.e., ambiguity criterion). Twelve facial expressions met these criteria (i.e., complete expressions with greater than or equal to 66% agreement on an emotion label). Table 1 reports the proportion of judges who agreed on the label for these 12 expressions, as well as the emotions expressed. As can be seen from Table 1, each of these six emotions is represented by one male and one female expresser, except for the expression of fear, where two female expressers were used. The reason for this is that there was no male expresser that adequately satisfied the criteria for a high-clarity fear expression.

By way of selecting low-clarity facial expressions, it is important to remember that Ekman et al.'s (1982) criteria for source clarity described high-clarity stimuli. Thus, if these criteria were not met, the face was considered to be a low-clarity expression. Because the partial expressions did not possess a complete expression of emotion, as a

high-clarity stimulus should, low-clarity expressions were selected from these faces (i.e., message complexity criterion). From these partial expressions, less than 66% of the participants agreed on the emotion perceived in 12 of these expressions. That is, there was no consensus answer on an emotion label for 12 faces (i.e., ambiguity criterion). In fact, only one face (a partial expression of surprise) had any consensus agreement amongst participants on any one label; however, this label was *none of these*, not an emotion label. Therefore, there was no consensus emotion label associated with these 12 partial expressions, thus meeting the criteria for low-clarity expressions. These twelve faces were represented by six male expressers and six female expressers.

In order to determine whether the 12 faces representing high-clarity expressions were more intense than the 12 faces representing low-clarity expressions, an independent-samples *t* test was performed comparing their respective mean intensity ratings. The analysis revealed that the high-clarity expressions ($M = 4.69$, $SD = .44$) were perceived to be significantly more intense than the low-clarity expressions ($M = 3.55$, $SD = .45$), $t\ (22) = -6.27$, $p < .001$, (i.e., intensity criterion). It was also of interest to see if participants were more confident in their judgments of the high-clarity expressions as compared to the low-clarity expressions. Using an independent-samples *t* test to compare their respective confidence ratings, the analysis revealed that the high-clarity expressions ($M = 5.39$, $SD = .31$) were rated with greater confidence than the low-clarity expressions ($M = 4.36$, $SD = .36$), $t\ (22) = -7.46$, $p < .001$.

Overall, the analysis reported suggests that the expressions selected were distinctly high and low in clarity. In terms of applying an operational definition to the high-clarity expressions, they were complete expressions of emotion, and were identified

by a majority of participants as one of six emotions. In contrast, the low-clarity expressions were characterized by being a partial expression of emotion, where participants could not agree upon an emotion label to apply to the expression. Also, high-clarity expressions were perceived to be significantly more intense than low-clarity expressions, and high-clarity expressions were judged with significantly more confidence than low-clarity expressions. Ultimately, these criteria met and exceeded (based on using confidence ratings) that set by Ekman and colleagues (1982) for source clarity.

Situation Clarity

In order to select situations that were high and low in clarity, several things had to be taken into consideration. First, situations selected must be represented in both the form of text and picture in order to compare the modes of presentation. Second, both of these modes of presentation must be the same in clarity (i.e., high-clarity vs. low clarity). Third, as Fernandez-Dols et al. (1991) pointed out, situations are judged differently than expressions, so it was not expected that participants would have a *consensus* answer regarding the emotion displayed as with the facial expressions. Therefore, the *modal answer* was used to determine clarity in terms of meeting the ambiguity and message complexity criteria.

In particular for high-clarity situations, it was important to select high-clarity situations that matched the six emotions displayed in the face (i.e., *happiness, anger, disgust, fear, surprise,* and *sadness*). So, the prototypicality and the valence of the emotion were used in selecting situations which appropriately represented the emotion. For example, a graveyard is an appropriate situational representation of sadness (see Fernandez-Dols et al., 1993 for a discussion of prototypicality). In sum, high-clarity

situations were determined by the modal answer being associated with one of six emotion labels for the text-scenarios, as well as the pictured-situations (i.e., message complexity and ambiguity criteria). Also, the valence of the emotion was considered, as well as the prototypicality of the situation to appropriately reflect that emotion (i.e. prototypicality criteria).

Table 2 lists the 12 situations that met these criteria for high-clarity situations, as well as the emotions the participants perceived to be reflected in these situations. As can be seen from Table 2, not all of the situations had one clear answer between the text and picture (i.e., the modal answer applied to the same label in both text-scenarios and picture-situations). However, as noted, the valence of the emotion (i.e., positive vs. negative) was taken into consideration in lieu of the actual label assigned to the situation.

In terms of selecting low-clarity situations, when the modal answer was n*one of these* and/or *I don't know* for the text-scenario, as well as the picture-situation, the situation was considered to be low-clarity. Table 3 lists these 12 situations that met this criterion; however, there was one exception. Text 2485's modal answer was applied to the *fear* label (39.5%); however, the *none of these* (26.3%) and *I don't know* (10.5%) labels combined nearly matched that proportion. Moreover, the picture version of this situation was decidedly low in clarity, as demonstrated by the modal answer selected by the participants.

In terms of meeting the criterion for intensity, high-clarity situations were supposed to be more intense than low-clarity situations (i.e., intensity criteria). In order to determine if this criterion was met, independent-samples *t* tests were used to compare the participants' intensity ratings of high-clarity picture-situations to their intensity ratings of

low-clarity picture-situations, as well as to compare their intensity ratings of high-clarity text-scenarios to their intensity ratings of low-clarity text-scenarios. These analyses revealed that high-clarity picture-situations (M = 5.41, SD = 1.14) were perceived to be more intense than low-clarity picture-situations (M = 3.12, SD = .45), t (22) = -6.48, $p <$ .001, and high-clarity text-scenarios (M = 4.80, SD = .77) were perceived to be more intense than low-clarity text-scenarios (M = 3.00, SD = .45), t (22) = -7.03, p = .001.

The same analysis was performed in order to compare the confidence ratings between the high and low-clarity situations. The analysis confirmed expectations, revealing that high-clarity picture-situations (M = 5.58, SD = 1.25) were judged with significantly greater confidence than low-clarity picture-situations (M = 3.99, SD = .24), t (22) = -4.32, $p <$ .001, and high-clarity text-scenarios (M = 4.83, SD = .54) were judged with significantly greater confidence than low-clarity text-scenarios (M = 3.75, SD = .40), t (22) = -5.60, p < .001.

In sum, high-clarity situations were characterized by the modal answer being associated with one of six emotions for the text-scenarios, as well as the picture-situations; whereas, low-clarity situations were characterized by participants' inability to label the situation as one of six emotions. High-clarity situations were perceived to be more intense than low-clarity situations. Also, high-clarity situations were judged with significantly greater confidence than low-clarity situations. Again, these criteria used met and exceeded (based on using confidence ratings) that set by Ekman and colleagues (1982) for source clarity.

Chapter III

Study 2

Method

Overview

The purpose of this study was to explore the effect that source clarity of the facial expression (high vs. low) and source clarity (high vs. low) and mode of presentation (picture vs. text) of the situation had on the recognition of facial expressions of emotion. Specifically, participants viewed facial expressions manipulated for clarity (high vs. low) embedded within picture-situations manipulated for clarity (high vs. low), and participants viewed the same expressions accompanied by written descriptions of the same situations. Participants rated these stimuli for the type and intensity of the emotion they perceived the actor to be experiencing, and they indicated their confidence in these judgments.

Participants

Participants (N = 178) were undergraduates at the University of Mississippi enrolled in introductory psychology courses. They received partial course credit for their participation. Information regarding participants' gender was not collected. Participants were randomly assigned to view half of the stimuli. Data from 11 participants were discarded because they did not complete two of the three judgments for, at least, 25% of the stimuli. Therefore, the final analysis only included responses from 167 participants.

Stimuli

The 24 expressions and the 24 situations (represented by pictures and described in text) that met the criteria for high-clarity and low-clarity were used to create the stimuli. Specifically, the facial expressions were embedded within the picture-situations using Photoshop 5.0 software. The facial expressions were placed on "shadowed" or "blacked-out" bodies within the picture-situation. The purpose of placing the facial expressions on the "shadowed" or "blacked out" bodies was to impede participants from making judgments based on the actor's bodily expression or dress. Additionally, a small red arrow was placed over the actor's head to indicate to the participant who the target was, hence who they were to direct their attention to when making their judgments. Also, the facial expressions were individually placed in Microsoft PowerPoint slides alongside a text-scenario that described the same situation that they were associated with in the picture-situations.

Also of note, high-clarity situations were matched with high-clarity expressions by the emotion identified by the participants. For example, a high-clarity happy expression was combined with a high-clarity happy situation. This was done for each of the high-clarity expression/high-clarity situation stimuli combinations, except in three circumstances. In one circumstance, an actor expressing disgust was combined with a sad situation. The valence is negative in both of these emotions, and the picture's content was such as to match with a disgust expression. For the other two circumstances, a surprise expression was combined with a fearful situation. Again the valence is similar and the content was such as to match with a surprise expression

Procedure

Participants were run in small groups of 1 to 13 in a large classroom in the same manner as in Study 1. After receiving consent forms, participants received the same ratings sheets as in Study 1 and then heard an audible cue (i.e., the experimenter's verbal prompt to begin) and saw a visual cue (i.e., a red cross projected on a screen in the front of the room for 1 s) in order to indicate that they were to begin their judgments of each of the stimuli. Participants then viewed either an actor displaying an expression of emotion embedded in a picture-situation or an actor displaying an expression of emotion accompanied by a text-scenario. This image was projected on a screen in the front of the room for 12 s. Participants who viewed facial expressions embedded in picture-situations looked at the "target person" (indicated by the red arrow above his or her head) in the situation and then made the same three judgments as in Study 1. Participants who viewed the expressions accompanied by the text-scenarios looked at the person, read the text-scenario describing the situation the expression was to have taken place, and then made the same three judgments as in Study 1. A total of 12 facial expressions combined with situations were individually presented. Between each of the stimuli, participants were cued both visually (i.e., a red cross appeared on the screen for 1 s) and audibly (i.e., the experimenter said the number of the slide being shown) that the stimulus was about to be presented. Once the task was complete, the experimenter collected the ratings sheets, answered any questions, and thanked them for their participation.

Results and Discussion

Emotion Label

It was expected that the neither the clarity of the situation (high vs. low) nor the mode of presentation (picture vs. text) would affect participants' accuracy in identifying high-clarity facial expressions. That is, it was expected that participants would accurately identify these expressions, regardless of the situation with which they were combined. This hypothesis was confirmed. Using the consensus answers for the facial expressions in Study 1 as the correct answer, a percentage of correct responses was calculated for the participants who judged these expressions. A Situation Clarity (high vs. low) × Stimulus Type (picture vs. text) ANOVA was performed on this percent-correct variable, revealing that there was no significant difference in participants' ability to accurately identify high-clarity expressions, regardless of the situation's clarity or mode of presentation (see Table 4). While the analysis did not reveal any statistically significant differences in participants' ability to accurately identify high-clarity expressions, the situation clarity by stimulus type interaction did approach statistical significance. However, partial η^2 reports that only 3% of the variance is accounted for in this interaction. This translates into a small to medium size effect. Thus, because the effect is relatively small and the probability did approach statistical significance, it is possible that a larger sample size would yield a significant result. With that said, some caution should be used in interpreting these results; however, these data suggest that faces which express one clear, intense, and recognizable emotion are not reinterpreted in light of the situation with which they are associated.

Of particular interest regarding low-clarity expressions was whether participants could agree on an emotion label when the face was placed in a context, even though low-clarity expressions were characterized by participants' inability to identify an emotion when they were presented in isolation. It was expected that low-clarity expressions would be interpreted by a majority of participants to display one of six emotions as a result of the additional information provided by a high-clarity context. Table 5 lists five low-clarity facial expressions which reached the criteria set in Study 1 for a consensus answer (i.e., greater than or equal to 66%) and one facial expression that reached 65% agreement. Thus, participants were able to identify a total of six expressions when they were combined with situation information. Interestingly, Table 5 reveals that one facial expression was labeled by participants as *anger* in every condition in which it was combined with situation information, despite the fact that it was not labeled as that emotion in isolation. Unfortunately, beyond this, Table 5 does not indicate that any specific pattern emerged as to when participants were able to identify an emotion in the face. For example, expressions that reached a consensus answer were not all combined with high-clarity situations, as expected. All that can be seen from this table is that a majority of participants were able to identify *some* expressions in *some* conditions as expressing one of six emotions when it was combined with situation information, despite the fact that participants were not able to identify an emotion in the face when it was presented in isolation.

Overall, these data suggest that the situation contributes little in identifying an emotional experience regardless of the clarity of the expression. However, because six low-clarity expressions did reach or *nearly* reached a consensus answer at least once, it

cannot be said that the situation has *no* effect in identifying an emotional expression, but no pattern emerged to reveal any clear interpretation as to when this occurs. Moreover, there was no difference in accuracy for identifying high-clarity expressions as a result of the additional situation information, thus suggesting the power of the emotion message in the face.

Intensity and Confidence Ratings

Intensity and confidence ratings were expected to mirror each other in terms of the results. It was expected that when participants viewed high-clarity expressions embedded in high-clarity picture-situations, they would rate the emotion identified as most intense and be most confident in their judgments of these stimuli, and that when participants viewed low-clarity expressions accompanied by low-clarity text-scenarios, they would rate the emotion identified as least intense and be least confident in their judgment of these stimuli. However, this interaction was not found.

A Face Clarity (high vs. low) × Situation Clarity (high vs. low) × Stimulus Type (picture vs. text) ANOVA was performed on participants' intensity ratings, revealing three main effects (see Table 6). Specifically, participants perceived high-clarity expressions ($M = 4.40$, $SD = .83$) to be more intense than low-clarity expressions ($M = 3.54$, $SD = .94$), regardless of the accompanying context, and participants perceived facial expressions combined with high-clarity situations ($M = 4.19$, $SD = .89$) to be more intense than facial expressions combined with low-clarity situations ($M = 3.75$, $SD = 1.03$). Even though the expected interaction did not occur, these results are not entirely surprising, but what is surprising is that participants perceived facial expressions accompanied by text-scenarios ($M = 4.22$, $SD = .99$) to be more intense than facial

expressions embedded in picture-situations (M = 3.74, SD = .92). Because intensity is a criterion for source clarity, this finding in isolation suggests that text-scenarios were better representations of the context than picture-situations. Moreover, the analysis also revealed that face clarity accounted for 22% of the variance, while situation clarity and stimulus type accounted for 6% and 8% of the variance, respectively. Again, this reiterates the power of the emotion message in the face due to the fact that face clarity variable had the largest effect.

The same ANOVA was performed on participants' confidence ratings, and the analysis revealed three main effects (see Tables 7). Confidence ratings mirrored intensity ratings for face clarity. Specifically, participants were more confident in their judgments of high-clarity expressions (M = 4.45, SD = 1.17) than in their judgments of low-clarity expressions (M = 3.78, SD = 1.16), regardless of the accompanying context information. The latter two main effects of situation clarity and stimulus type were qualified by a marginally significant interaction (see Figure 1). Simple effects analysis revealed that participants were more confident in their judgments of facial expressions embedded in picture-situations as opposed to these expressions accompanied by text-scenarios, regardless of whether it was a high-clarity situation, F (1, 159) = 10.41, $p < .01$, or a low-clarity situation, F (1, 159) = 32.41, $p < .01$. This is surprising because participants rated facial expressions accompanied by text-scenarios as more intense, and it was expected that intensity and confidence ratings would mirror each other. Additionally, participants' confidence did not differ as a function of clarity when the facial expressions were embedded in picture-situations, F (1, 159) = .12, p = .73, whereas participants were

significantly more confident in their facial judgments when they were accompanied by text-scenarios high in clarity as opposed to low in clarity, F (1, 159) = 8.46, $p < .01$.

In sum, participants were more confident in their judgments of high-clarity expressions as opposed to low-clarity expressions, regardless of the situation's clarity or mode of presentation. Furthermore, partial η^2 indicated a relatively large effect of .10 for face clarity. Together, these findings further suggest the power of an intense, emotion message in the face. Moreover, participants were more confident in their judgments of facial expressions embedded in picture-situations, as opposed to facial expressions accompanied by text-scenarios. These findings in conjunction with the fact that the mode of presentation accounted for 20% of the variance suggest that picture-situations are better representations of the situation than text-scenarios; however, these results contradict the findings that participants perceived facial expressions accompanied by text-scenarios to be more intense than facial expressions embedded in picture-situations.

Difference Scores

It was expected that when participants viewed facial expressions coupled with context information, ratings of intensity and confidence would increase as compared to when participants viewed these same expressions in isolation. In order to explore the change in these ratings, difference scores were calculated using participants' ratings of intensity and confidence in Study 1, which is when they viewed the facial expressions in isolation, and participants' ratings of intensity and confidence in Study 2, which is when they viewed the same expressions combined with context information. Specifically, the intensity and confidence ratings of Study 2 were subtracted from the intensity and confidence ratings of Study 1 for each of the facial expressions, so that a positive number

indicated an increase in perceived intensity and confidence, a negative number indicated a decrease in perceived intensity and confidence, and a zero indicated no change in perceived intensity and confidence. ANOVAs were then performed on these intensity and confidence difference scores. For main effects, one-sample *t* tests were performed comparing their mean differences to zero. As noted, zero indicates that no change had occurred between the ratings of the facial expressions presented in isolation compared to the ratings of these expressions coupled with context information. For interaction effects, appropriate post-hoc analyses were performed, followed by the one-sample *t* tests as described for the main effects analysis.

The Face Clarity (high vs. low) × Situation Clarity (high vs. low) × Stimulus Type (picture vs. text) ANOVA performed on the intensity difference scores revealed three main effects (see Table 8). The marginally significant face clarity main effect revealed that when participants' ratings of facial expressions in context were compared to those same expressions in isolation, participants perceived the intensity of the emotion expressed in the face to change more for high-clarity expressions (M = -.29, SD = .83) than for low-clarity expressions (M = -.07, SD = .94). Specifically, participants perceived high-clarity facial expressions in context to be less intense than those same expressions in isolation, t (84) = -3.22, $p < .01$, whereas participants perceived low-clarity facial expressions in context to be as intense as those same expressions in isolation, t (81) = -.72, p = .48. The situation clarity main effect revealed that when participants' intensity ratings of facial expressions in context were compared to those same expressions in isolation, participants perceived the intensity of the emotion expressed in the face to change more when the face was combined with low-clarity situations (M = -.40, SD =

.96) than when the face was combined with high-clarity situations (M = .02, SD = .92). Specifically, participants perceived facial expressions in low-clarity situations to be significantly less intense than those same expressions in isolation, t (80) = -3.78, p <.001, whereas participants perceived facial expressions in high-clarity situations to be just as intense as those expressions in isolation, t (85) = .28, p = .78. The stimulus type main effect revealed that when participants' intensity ratings of facial expressions in context were compared to those same expressions in isolation, participants perceived the intensity of the emotion expressed in the face to change more when the face was embedded in picture-situations (M = -.42, SD = .79) than when the face was accompanied by text-scenarios (M = .06, SD = .92). Specifically, participants perceived facial expressions embedded in picture-situations to be significantly less intense than those same expressions in isolation, t (84) = -4.90, p < .001, whereas participants perceived facial expressions accompanied by text-scenarios to be just as intense as those same expressions in isolation, t (81) = .60, p = .55.

Overall, these analyses suggest that the addition of context information does not aid in increasing the intensity of the emotion message provided by the face. In some instances, participants were able to perceive the same amount of emotional intensity in the face, regardless of whether it was presented in isolation or in context, but in other instances, participants were unable to perceive the same amount of emotional intensity in the face due to the additional situation information. Most notably, there were no instances in which the situation information significantly increased the intensity of the emotion message in the face. Thus, these data further suggest that the face provides a powerful emotional message—one that is not enhanced by context information. Moreover, for the

face clarity, situation clarity, and stimulus type main effects, partial η^2 reports the effects sizes as .02, .06, and .08, respectively. Thus, the largest effect was due to the mode of presentation. This finding in conjunction with the intensity analysis previously reported, which suggested that faces accompanied by text-scenarios are perceived to be more intense than faces embedded in picture-situations, and the present finding, which suggests that faces accompanied by text-scenarios are perceived to have the same amount of intensity as when viewed in isolation, suggests that text-scenarios are better representations of the emotion message for situations.

The Face Clarity (high vs. low) × Situation Clarity (high vs. low) × Stimulus Type (picture vs. text) ANOVA performed on the confidence difference scores revealed three main effects (see Table 9). The face clarity main effect revealed that when participants' ratings of facial expressions in context were compared to those same expressions in isolation, participants' confidence in their judgments changed more for high-clarity expressions (M = -.93, SD = 1.17) than for low-clarity expressions (M = -.60, SD = 1.16). Specifically, participants were less confident in their judgments of high-clarity facial expressions in context than in their judgments of those same expressions in isolation, t (84) = -7.35, $p < .01$. Also, participants' were less confident in their judgments of low-clarity expressions in context than in their judgments of those same expressions in isolation, t (81) = -4.47, $p < .01$. The latter two main effects of situation clarity and stimulus type were qualified by a marginally significant interaction (see Figure 2). The simple effects analysis revealed that when participants' ratings of facial expressions in context were compared to those same expressions in isolation, participants' confidence in their judgments of facial expressions changed more when the expression was

accompanied by text-scenarios than when the expression was embedded in picture-situations, regardless of whether the situation was high in clarity, F (1, 159) = 10.41, $p <$ .01, or low in clarity, F (1, 159) = 32.41, $p < .001$. When comparing participants' ratings of facial expressions in context to the same expressions in isolation, participants' confidence ratings changed more when the expression was accompanied by a low-clarity text-scenario rather than a high-clarity text-scenario, F (1, 159) = 8.46, $p < .01$; whereas, participants' confidence ratings was similar when the face was embedded in low-clarity and high-clarity picture-situations, F (1, 159) = .12, $p = .73$. Specifically, participants were significantly less confidence in their judgments of facial expressions accompanied by text-scenarios than in their judgments of these expressions in isolation, regardless of whether the situation was high in clarity, t (42) = -5.87, $p < .01$, or low in clarity, t (38) -9.68, $p < .01$. Additionally, participants' confidence in their judgments of facial expressions embedded in low-clarity picture-situations was significantly less than in their judgments of these expressions in isolation, t (41) = -2.16, $p < .05$, but participants' were just as confident in their judgments of facial expressions embedded in high-clarity picture-situations as when these expressions were viewed in isolation, t (42) = -1.45, $p =$ .16. In other words, participants were less confident in their judgments of facial expressions combined with all types of situations as compared to their confidence in their judgments of these faces in isolation, except when the face was combined with a high-clarity picture-situation.

Overall, these analyses of confidence difference scores reveal that participants are not aided by the additional context information. It appears that in some instances the addition of the context confuses the observers' perception of the emotion message, thus

making them less confident in their judgments. Moreover, the confidence difference scores did not mirror those of the intensity difference scores for the stimulus type variable. Specifically, for the intensity difference scores, participants' perceived the intensity of the facial expression viewed in isolation to be less when these expressions were viewed embedded in a picture-situations, but perceived the intensity in the facial expression to be the same when viewed accompanied by a text-scenarios. Thus, those data suggested that the text-scenarios were better representations of the situation. However, the analysis of the confidence difference scores revealed that participants' confidence in their judgments of the facial expressions viewed in isolation were the same when the expressions were embedded in picture-situations, but participants were significantly less confident in their judgments when these expressions were accompanied by text-scenarios. Additionally, the mode of presentation had a large effect (partial η^2 = .20). Together these results conflict with those found for the intensity difference scores, suggesting that picture-situations are better representations of the emotion message.

Chapter VI

General Discussion

Emotion in the Face

Ultimately, these findings provide evidence that the face is a key source of emotion information. This was evidenced, in part, by the fact that participants were able to accurately identify high-clarity expressions of emotion regardless of the situation's clarity (high vs. low) or mode of presentation (picture vs. text). Thus, because the situation did not affect participants' ability to identify the emotion message of high-clarity expressions, this suggests that they did not need to infer information from the situation in order to identify the emotion. Also, participants were unable to consistently identify the low-clarity expressions in context. Together, these results provide evidence that the face was a powerful emotion messenger because participants were able to identify an emotion when the face expressed a clear emotion, but the participants were unable to consistently identify an emotion when the face did not express a clear emotion. Additional support for this conclusion was found in the fact that when intensity and confidence ratings were compared between seeing facial expressions in isolation to seeing these same expressions in context, ratings of intensity and confidence did not increase, as expected, even though participants were exposed to additional emotion information provided by the situation.

While the facial expressions did appear to dominate as the emotion messenger, some qualifications should be made with this interpretation. First, while no statistical

difference was found in participants' ability to identify high-clarity expressions across situations (i.e., high-clarity vs. low-clarity and picture vs. text), the situation clarity by stimulus type interaction did approach statistical significance. The effect for this interaction was relatively small, suggesting that perhaps with a higher *N*, a statistically significant effect could be found as a result of greater statistical power. Second, the results regarding the low-clarity expressions are not clearly interpretable. Twelve low-clarity expressions presented in isolation were not identified by participants as expressing an emotion, but six of these expressions were identified as an emotion when presented in context. Therefore, half of the expressions were able to be identified as an emotion in at least one situation, but no clear pattern was evident to indicate which types of situations (high-clarity vs. low-clarity or picture vs. text) contributed to the emotion message of the face.

In sum, these data suggest the power of the emotion message in the face. However, these results should be interpreted with caution. In particular, consideration should be made regarding the marginally significant situation clarity by stimulus type interaction, as well as the interplay of low-clarity expressions in context. Thus, such reservations made regarding the interpretation of the data highlights the need for further exploration.

Integration with Previous Research

The explanation offered for the present results is that the weight of the emotion message is carried by the facial expressions. By way of reconciling this interpretation with past literature, Fernadez-Dols (1999) and Fernandez-Dols, Carrera, and Russell

(2002) offer an explanation for the present results. Specifically, they propose that findings consistent with the present work were due to the *fundamental attribution error* (Ross, 1977). The fundamental attribution error proposes that an observer has a tendency to infer dispositional attributions as opposed to situational attributions when interpreting one's actions. Thus, when interpreting an emotional event, it is more likely that an observer will infer a dispositional attribution to the behavior (e.g., he or she is crying, therefore he or she must be sad) as opposed to situational attributions (e.g., he or she is receiving an award for an accomplishment, therefore he or she must be overcome with happiness). The fact that observers' endorsement of one emotion was dependent more upon the emotion information provided in the high-clarity expression than from the situation suggests that there was a bias in inferring information from only one source—the face. However, because the results revealed that six of the low-clarity expressions were able to be identified as an emotion only when presented in context, this provides some evidence to suggest that when the face does not display a clear emotion, the situation provides the needed additional information in order for an observer to identify the emotion. So, while the fundamental attribution error can explain the findings regarding high-clarity expressions, this does not completely explain why the context did aid in the judgment of *some* of the low-clarity expressions. Gilbert, Pelham, and Krull's (1988) model of the fundamental attribution error is perhaps a better explanation for interpreting the findings for both the high-clarity expressions and the low-clarity expressions. Gilbert, et al. proposed that one makes an *automatic* dispositional attribution, but later adjusts this attribution to the situation, if the situation provides enough clear information. Gilbert and colleagues claim that this later step is an effortful

one. Thus, when participants in the present work viewed high-clarity expressions, there was no need to make this second, effortful step because the facial expression (disposition) already clearly portrayed the emotion message. On the other hand, when participants viewed low-clarity expressions, they were "forced" to infer more information from the situation, due to the lack of clarity in the face. This model makes a plausible argument by way of explaining the present findings. Ultimately, we see a dispositional bias confirmed by the fact that high-clarity expressions were identified by participants, regardless of the situation, but for low-clarity expressions, participants relied on the additional situational information to identify the emotion (at least for six of these expressions).

Thus, it appears that the clarity of the emotion in the face determines when participants use the situation information to interpret the emotion message. Previous research has provided additional support for this idea. For example, Carrera-Levillain & Fernandez-Dols (1994) showed that emotion is inferred from an emotionally neutral face when it is placed in context. Thus, low-clarity emotion or lack of emotion is interpreted in light of the situation. On the other hand, when clear emotional expressions have been coupled with situations, the face appears to dominate as the emotion messenger (e.g., Watson, 1972). This is not to say that studies have found the expression of basic emotions (i.e., presumably high-clarity expressions) to be unaffected by the situation. In fact, some studies (e.g., Wallbott, 1988b) have found that basic emotions were vulnerable to interpretation due to the situation. The fact that the situation had no effect on the interpretation of high-clarity faces in the present study may be a result of several factors. For example, the study could have been underpowered. As previously discussed, when analyzing the effect of the situation's clarity and mode of presenting the situation on

participants' accuracy for identifying high-clarity expressions, there was a marginally significant situation clarity by stimulus type interaction found. As noted, increasing *N* could result in statistical significance. Also, it is possible that the situation simply did not carry the necessary emotional weight. The present study used participants' modal answer as opposed to the consensus answer to determine their perception of the emotion reflected in the situation. Therefore, it is possible that because a majority of participants were unable to agree on the identity of the emotion reflected in the situation there is some weakness in the weight of the emotion reflected in the situation. Moreover, researchers in this area (e.g., Munn, 1940, Spignesi & Shor, 1981; Wallbott, 1988a, 19988b) have tried to make their situations realistic. The situations used in the present work were selected from a normed set of photographs. While these situations were emotional as indicated by the normed ratings of valence and arousal, and after being manipulated for the present study, were identified by participants to represent distinctly high and low clarity emotions, it is still possible that the realistic or impactful nature of the emotion reflected in these situations was not as great as those used by Munn (1940), Wallbott (1988a; 1988b), and others, who have used situations from magazines, newspapers, and television.

In sum, there is evidence to suggest in the present work and in previous research that facial expressions carry the emotional weight. In particular, it is suggested that the clarity of the facial expression is what determines whether the participants will use the situation information in their interpretation of the emotion. Low-clarity, but not high-clarity faces, appeared to be influenced by the additional information provided by the situation. Thus, future research is needed to explore this interplay of low-clarity facial

expressions in context. Additionally, future research is needed to explore whether the situations selected from magazines, newspapers, and television events used by Wallbott (1988a; 1988b) and others are more powerful than the situations presented in photograph sets like the IAPS. Specifically, further research is needed to explore which situations contribute the most to the emotion message in the face.

Source Clarity and the Mode of Presentation

Of particular interest in the present work were the issues of source clarity and mode of presentation. Overall, past research has found the study of facially-expressed emotions in context to be a considerably difficult task to explore, and the findings up to this point have been inconclusive at best because of the inconsistency in the conclusions. Some of these inconsistencies have been explained as a result of methodological flaws, as well as the variety of methodology (e.g., Jenness, 1932). The present study contributed to this body of literature by empirically exploring whether the unequal representation of the face and context (i.e., photographed face vs. written context) and unequal clarity of the stimuli (high vs. low) affected participants' judgment of facial expressions in context.

The first issue was addressed because many prior studies relied on the Goodenough and Tinker design, where photographs of faces were paired with written descriptions of situations. Pictures of faces were proposed to be more vivid representations of the emotion message than written descriptions of the context. Thus, it was presumed that observers were more prone to use facial information instead of situation information to infer the emotion message. The present study sought to empirically test whether text-scenarios or picture-situations were better representations of

the emotion message provided by the situations, but no clear answer emerged. The results were somewhat mixed because faces accompanied by text-scenarios were seen as more intense than faces embedded in picture-situations, yet participants' were more confident when judging faces embedded in picture-situations than accompanied by text-scenarios. Moreover, the largest effect for the participants' confidence ratings was found for the mode of presentation. Thus, there is some evidence suggesting that the mode of presentation is an important variable to consider. Unfortunately, the present work was unable shed any light as to which mode of presentation was a better representation for the emotion message provided by the situation.

The second issue addressed in this study was the effect of clarity on the recognition of emotion. For many years in this area of research, Ekman and colleagues' (1982) review of the literature brought the issue of source clarity to the forefront. It was speculated that unequal clarity should be an issue addressed because presenting one stimulus with a high-clarity emotion and the other with a low-clarity emotion could cause an observer to base their judgments on the clearer representation of the emotion, and the purpose of studying facial expressions in context is to determine the observer's natural way of determining an emotion message. Therefore, it was important to present both sources with equal clarity so the results would not be open to criticism. The present study found that clarity was a factor in deciphering an emotion message. Specifically, participants were consistently accurate in identifying high-clarity expressions; whereas, this was not found for low-clarity expressions. Additionally, the situation's clarity affected observers' interpretation of the emotional intensity in the face and their confidence in their judgments of facial expressions. Specifically, faces combined with

high-clarity situations were perceived to be more intense than faces combined with low-clarity situations, and participants were more confident in their judgments of faces combined with high-clarity situations, as opposed to their judgments of faces combined with low-clarity situations. Taken together, these data provide evidence to suggest that source clarity can alter the interpretation of the emotion message.

Moreover, these two variables combined created a marginally significant interaction in participants' confidence ratings. Also, when exploring the effect of the situation on participants' ability to accurately identify high-clarity expressions, there was a marginally significant situation clarity by stimulus type interaction. Perhaps with a larger *N*, both of these interactions would become statistically significant. The point here is that these results suggest that the interaction of the situation's clarity and mode of presentation have an effect on participants' perception of the emotional message. Thus, this further highlights the importance of these two variables.

Conclusions and Future Directions

Overall, the present study has broad implications for emotion research. These data provided evidence to suggest that the face was a powerful emotion messenger. This was evidenced, in part, by the fact that participants were able to consistently identify the emotion message for high-clarity expressions, but they were unable to consistently identify the emotion message in low-clarity expressions. Additionally, it was evidenced by the fact that participants' ratings of intensity and confidence did not increase when they viewed the face in context as compared to viewing the face in isolation. However, these data were explained with some caution for two reasons. First, while no statistical

difference was detected in participants' ability to accurately identify an emotion from high-clarity expressions as a result of the situation, this does not mean that the situation does not have an impact. In fact, many studies (e.g., Carroll & Russell, 1996; Cupchick & Poulos, 1984) have found that the interpretation of emotion in the face to be influenced by the context information. Some consideration should be made as to why this study did not find the situation to influence the interpretation of emotion in high-clarity expressions, when other studies have found situational influence. Hypotheses for explaining these results within the context of past literature have been offered, but empirical support is lacking. Specifically, the explanations offered were that the situations used in the present study were different than other studies in that they were not taken from real life events (e.g., newspapers or magazines). Therefore, future research should take into consideration the types of situations used. Also, even though the situations in the present study were identified by participants as an emotion (high-clarity) or not (low-clarity), the possibility remains that these situations simply did not carry the necessary emotional weight. Another explanation for why these data were interpreted with some caution is because the findings regarding low-clarity expressions were not easily interpretable. The situation appeared to aid participants in identifying *some* of these expressions. Unfortunately, no clear pattern emerged as to what situations benefited participants. Thus, there appears to be some evidence that the participants use the situation to identify the emotion in the face when it is expressing a low-clarity emotion.

Ultimately, these findings indicate that the clarity of the emotion expressed in the face determines whether or not an observer will use information provided by the situation to identify the emotion message in the face. Also, these findings highlight the need for

future research in two areas—an exploration into whether realistic situations are better representations of the situation than the kinds of normed photographs used in the present study and further research into the relationship between low-clarity expressions and situation information.

Of particular interest in the present work was the exploration of how the mode of presenting the situation (i.e., picture vs. text) and clarity of the stimuli (i.e., face and context) affected participants' interpretation of the emotion in the face. The results suggest that the mode of presentation is an important variable to consider, but unfortunately no clear findings were made regarding which mode of presenting the situation was a better representation of the situation's emotion message. While this may be disappointing, the fact that the present work simply found empirical evidence that the mode of presentation is an influential variable in interpreting the emotion message is important because researchers' (e.g. Carroll & Russell, 1996; Watson, 1972) assumptions and hypotheses now have empirical support. Further exploration is needed to answer the particular question of which mode of presenting the situation is a better representation of the emotion message, but, at least, the present work contributed a necessary first step.

In regards to the clarity of the stimuli (i.e., face and context), the present work found evidence to suggest that source clarity is an important variable to consider in future research. The clarity of the face appeared to be influential in participants' consistently identifying the emotion message, and the clarity of the situation affected participants' perception of the intensity in the face, as well as their confidence in their judgments. Of particular interest was the fact that a marginally significant situation clarity by stimulus type interaction was found in two different analyses. Thus, these data further suggest that

these two variables (i.e., situation clarity and mode of presentation) together are important matters to consider in future research.

In sum, the present research explored the effect that source clarity and mode of presenting the situation had on participants' interpretation of the emotion expressed in the face. While caution was made in interpreting some of the null results, the present work did find empirical support for intuitions and hypotheses of researchers, who suggested that source clarity and mode of presenting the situation were influential factors in observers' interpretation of the emotion message expressed in the face. Additionally, there was some evidence found in the present work to suggest that the interaction of these two variables is important to consider in future research exploring facial expressions in context. While the present work does not leave any clear conclusions regarding this relationship between facial behavior and situation information, necessary steps were taken in exploring some of the methodological issues that were proposed to be influential. Furthermore, the present work highlights areas for future consideration.

Chapter V

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Chapter VI

TABLES

Table 1

Percent Agreement for High-Clarity Faces

Label	Sex	Emotion	Percent Agreement
DG	M	Happiness	100.0
TA	F	Happiness	100.0
ES	M	Anger	94.7
LR	F	Anger	97.9
BC	M	Disgust	83.3
GM	F	Disgust	83.0
KB	F	Fear	65.8
SB	F	Fear	70.6
JG	M	Surprise	98.0
SS	F	Surprise	93.6
JC	M	Sadness	94.7
NH	F	Sadness	96.1

Table 2

Percent Agreement for High-Clarity Situations

IAPS Number	Slide Description	Emotion	Text	Picture
2391	Boy and grandfather with fish	Happiness	94.7	94.1
8461	Friends having fun together	Happiness	80.4	92.1
6312	Girl being kidnapped	Anger	36.2*	23.8
		Fear	36.2*	59.5*
8311	Golf course sand-trap	Anger	42.6*	4.8
		Fear	2.1	57.1*
9330	Piles of garbage on street	Disgust	73.7	60.8
9250	Doctors carrying bloody child	Sadness	61.9	44.7
6313	Threatened with a knife	Fear	71.1	78.4
3500	Threatened with a gun	Fear	76.2	72.3
5950	Lightning in the sky	Fear	69.6	69.0
5940	Approaching lava	Anger	0.0	44.7*
		Fear	78.6*	0.0
2205	Sick, bedridden elderly woman	Sadness	83.3	72.3
9220	Grieving couple at the graveyard	Sadness	94.7	86.3

Note. Asterisks (*) are shown in order to indicate a modal answer when more than one label was given.

Table 3

Percent Agreement for Low-Clarity Situations

IAPS Number	Slide Description	Label	Text	Picture
1670	Cow in open field	None of these	54.9	47.4
2495	Doorway	None of these	55.3*	23.5
		I don't know	28.9	37.3*
5900	Deserted road	None of these	47.1	50.0
2381	Phone Conversation	None of these	55.3	35.7
2515	Children in a field	Happy	40.5*	34.0*
		None of these	35.7	8.5
		I don't know	9.5	17.0
7130	Eighteen-wheeler	None of these	40.4	71.4
2383	Office environment	None of these	73.7	41.7
2520	Walled walkway	Sadness	7.1	31.9*
		None of these	50.0*	17.0
		I don't know	21.4	21.3
7496	Street scene	None of these	35.3	34.2
2485	Chairs in field	Fear	39.5*	5.9
		None of these	26.3	13.7
		I don't know	10.5	62.7*
2850	Crowded street	None of these	33.3*	23.4
		I don't know	14.3	53.2
7500	Large Building	None of these	42.6	50.0

Note. Asterisks (*) indicate the modal answer for Study 1 when there is more than one answer given.

Table 4

Two-way ANOVA on Percent Agreement

Source	*df*	*F*	Partial η^2	*p*
Situation Clarity	1	1.66	.20	.20
Stimulus Type	1	.50	.01	.48
Situation Clarity × Stimulus Type	1	2.82	.03	.10
Error	81			

Means (SDs) for Percent Agreement

	Stimulus Type	
Situation Clarity	Picture	Text
High	80.56 (11.59)	83.70 (13.87)
Low	81.82 (18.66)	74.12 (14.14)

Table 5

Percent Agreement for Low-Clarity Faces

			Study 2			
			Picture		Text	
Face	Emotion	Study 1	Low Clarity	High Clarity	Low Clarity	High Clarity
Partial Anger	Anger	0.0	85.0	81.8	70.0	75.0
Partial Anger	Anger	33.3	65.0	50.0	20.0	45.0
Partial Disgust	Disgust	35.3	45.0	36.4	70.0	30.0
Partial Fear	Surprise	48.9	80.0	68.2	45.0	65.0
Partial Happy	Disgust	2.2	30.0	80.0	35.0	80.0
Partial Surprise	Surprise	38.6	45.0	54.5	75.0	55.0

Table 6

Three-way ANOVA on Intensity Ratings

Source	*df*	*F*	Partial η^2	*p*
Face Clarity	1	44.21	.22	< .0005
Situation Clarity	1	10.71	.06	< .0005
Stimulus Type	1	13.41	.08	< .0005
Face Clarity × Situation Type	1	.05	.00	.83
Face Clarity × Stimulus Type	1	.55	.00	.46
Situation Clarity × Stimulus Type	1	.19	.00	.66
Face Clarity × Situation Clarity × Stimulus Type	1	1.04	.01	.31
Error	159			

Means (SDs) for Intensity Ratings

	Face Clarity	
Stimulus Type	High	Low
Picture-Situations		
Situation Clarity		
High	4.47 (.71)	3.36 (.67)
Low	3.95 (.97)	3.15 (.69)
Text-Scenarios		
Situation Clarity		
High	4.77 (.68)	4.12 (.80)

Low	4.40 (.72)	3.53 (1.26)

Table 7

Three-way ANOVA on Confidence Ratings

Source	*df*	*F*	Partial η^2	*p*
Face Clarity	1	16.80	.10	< .0005
Situation Clarity	1	5.36	.03	.02
Stimulus Type	1	40.09	.20	< .0005
Face Clarity × Situation Clarity	1	.15	.00	.70
Face Clarity × Stimulus Type	1	1.07	.01	.30
Situation Clarity × Stimulus Type	1	3.38	.02	.07
Face Clarity × Situation Clarity × Stimulus Type	1	.32	.00	.57
Error	159			

Means (SDs) for Confidence Ratings

	Face Clarity	
Stimulus Type	High	Low
Picture-Situations		
Situation Clarity		
High	4.87 (1.13)	4.41 (.95)
Low	4.82 (.84)	4.30 (1.09)
Text-Scenarios		
Situation Clarity		

High	4.41 (1.28)	3.43 (.82)
Low	3.58 (1.00)	2.91 (1.09)

Table 8

Three-way ANOVA on Intensity Difference Scores

Source	*df*	*F*	Partial η^2	*p*
Face Clarity	1	2.96	.02	.09
Situation Clarity	1	10.71	.06	< .0005
Stimulus Type	1	13.41	.08	< .0005
Face Clarity × Situation Type	1	.05	.00	.83
Face Clarity × Stimulus Type	1	.55	.00	.46
Situation Clarity × Stimulus Type	1	.19	.00	.66
Face Clarity × Situation Clarity × Stimulus Type	1	1.04	.00	.31
Error	159			

Means (SDs) for Intensity Difference Scores

	Face Clarity	
Stimulus Type	High	Low
Picture-Situations		
Situation Clarity		
High	-.22 (.71)	-.25 (.67)
Low	-.74 (.97)	-.46 (.69)
Text-Scenarios		

Situation Clarity		
High	.08 (.68)	.51 (.80)
Low	-.29 (.72)	-.08 (1.26)

Table 9

Three-way ANOVA on Confidence Difference Scores

Source	*df*	*F*	Partial η^2	*p*
Face Clarity	1	4.47	.03	.04
Situation Clarity	1	5.36	.03	.02
Stimulus Type	1	40.09	.20	< .0005
Face Clarity × Situation Clarity	1	.15	.00	.70
Face Clarity × Stimulus Type	1	1.07	.01	.30
Situation Clarity × Stimulus Type	1	3.38	.02	.07
Face Clarity × Situation Clarity × Stimulus Type	1	.317	.00	.57
Error	159			

Means (SDs) for Confidence Difference Scores

	Face Clarity	
Stimulus Type	High	Low
Picture-Situations		
Situation Clarity		
High	-.51 (1.13)	.03 (.95)
Low	-.56 (.84)	-.08 (1.09)

Text-Scenarios		
Situation Clarity		
High	-.97 (1.28)	-.95 (.82)
Low	-1.80 (1.00)	-1.47 (1.09)

Chapter VII

FIGURES

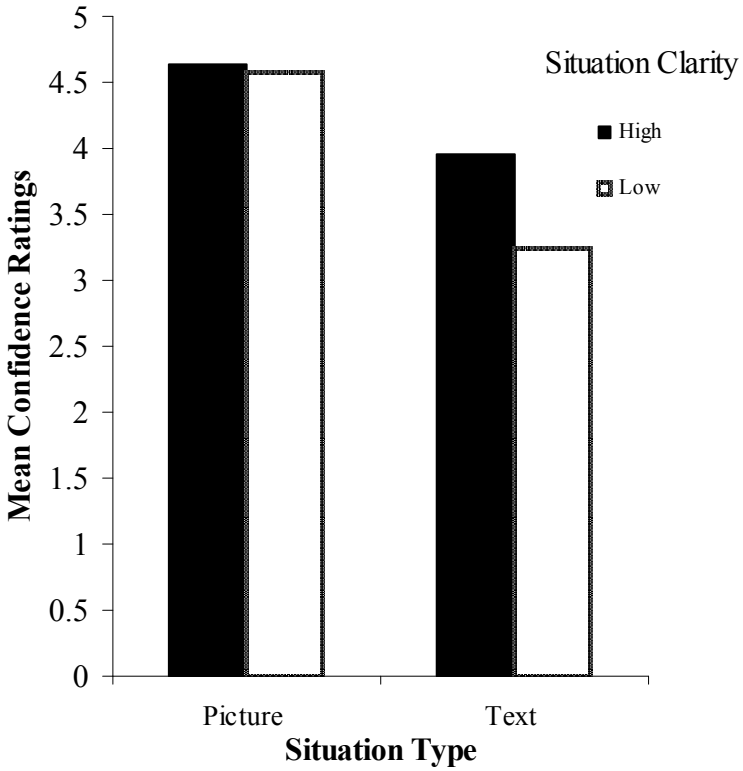

Figure 1. Mean confidence ratings as a function of situational clarity and stimulus type.

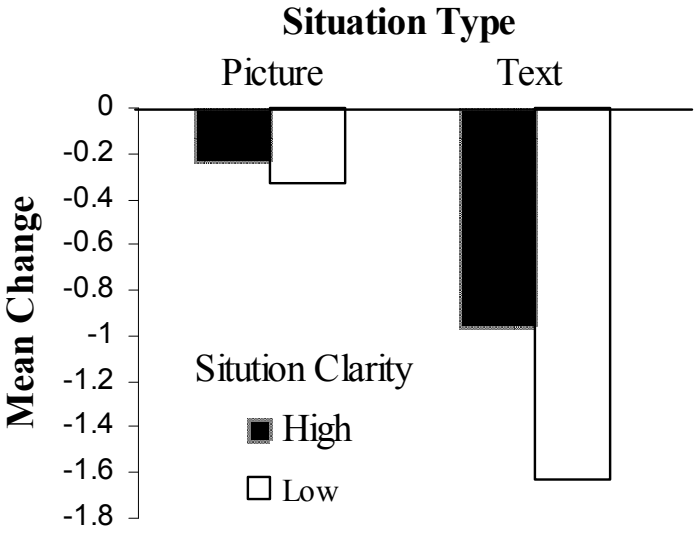

Figure 2. Change in judged confidence from Study 1 to Study 2 as a function of situation clarity and stimulus type.

Chapter VIII

VITA

Michael B. Kitchens was born on April 22, 1977, in Pensacola, Florida. Reared in the small town of Robertsdale, Alabama, he received his formative education at Faith Presbyterian Christian School. After graduating high school in 1995, he attended Faulkner State Community College for two years before moving on to the University of Mobile, where he graduated *cum laude* with a Bachelor of Science in Psychology in 2000. There, he received the Area Award as the top graduate in his field at the university. After graduation, Kitchens spent a year working full-time in his family's furniture store, which is the same place he had worked part-time through high school and college, before returning to school for his post-graduate work. In January, 2004, he married Jennifer Michele Groom. Currently, he and his wife reside in Oxford, Mississippi.