

Spreading like Wildfire: The Impact of Communication Channel on Emotional Contagion

by

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Abstract

Affect is a burgeoning area of study in organizational research. However, very few studies to date have examined the impact of communication channel on message interpretation. Research merging these two areas is even more scant. The aim of this study was to examine whether conveyed emotion or communication channel would impact emotion recognition or emotional contagion. In this online study, a sample of 182 participants assumed the role of an organizational newcomer receiving their first communication from their supervisor. Participants were randomly assigned to receive a text, audio, or video message that either conveyed happiness or anger. Compared to anger, happiness resulted in greater emotion recognition and emotional contagion. Findings also indicate that the audio condition resulted in higher emotion recognition and emotional contagion than both the text and video conditions. No significant differences were found between the text and video conditions. Practical implications and future directions are discussed.

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In the modern workplace, both management of affective states and use of technology are instrumental to having successful communications and high-quality working relationships. However, studies that examine the two jointly are few and far between. Affect permeates organizational processes and impacts interactions. It seeps into organizational politics; creates and sustains work motivation; and is ever-present in work deadlines, group projects, and human resource processes (Barsade & Gibson, 2007). Of similar token, technology may dictate the medium through which one chooses to communicate messages that may or may not have highly affective underpinnings. The combination of conveyed emotion and selected communication channel may influence how a message is interpreted, and the consequential effect the message has on its recipient. The aim of this study was to add to the current literature by investigating affective state with regard to social processes among virtual teams using the following communication channels: texted-based (computer-mediated), audio-based (audio recording), and video-based (video recording).

The study of both affect and technological advancement are highly relevant to organizational processes and their impact is ever-increasing (Cheshin, Rafaeli, & Bos, 2011; Fineman, Maitlis, & Panteli, 2007). Therefore, these constructs warrant higher priority in the attention given to each, and recently, these constructs are receiving greater, well-deserved attention (Fineman, Maitlis, & Panteli, 2007). With current organizational trends such as greater demographic diversity, flatter organizational structure, and an increase in telecommuting and telecommunication, the modern work environment necessitates better understanding of both affective processes and the changing face of communication associated with technological advancement.

Various studies have looked into how moods and emotions are recognized and then transferred from one individual to another in work teams and pairings (Levenson, Ekman, & Friesen, 1990; Scherer & Scherer, 2011), whereas the literature on the influence of communication channel on these phenomena is somewhat lacking. Studies integrating these two topical areas are even more limited. Cheshin, Rafaeli, and Bos (2011) reviewed emotional contagion among virtual teams using text-based communication only, while others have focused on other constructs such as personality and gender as predictors of emotion recognition and emotional contagion (Lundqvist, 2008; Sonnby-Borgstrom, Jonsson, & Svensson, 2008). The current study adds to the literature by considering the impact that the communication channel has on an individual's ability to detect a sender's emotion and the degree to which emotional contagion occurs, if at all. To date, few studies have examined this relationship between the communication channel and the phenomenon of emotional contagion. Further research is required in this area to establish a better understanding of the influence the communication channel on emotional contagion, and the development of shared affective states. The current study examined the influence of text-based, audio-based, and video-based communication channels on emotion recognition and emotional contagion when messages are highly activated and carry either a positive or negative affective tone. This study imitated a mundane work occurrence, in which the participant was told that they were a newly hired employee and that they have received a message from their supervisor. This study contributes to existing literature by integrating the aforementioned concepts and through an examination of the relationships between the communication channel, and emotion recognition and emotional contagion.

The present study analyzed the impact of technology on shared social processes. Each day workers use multiple channels to communicate various messages to one another. The

purpose of this study was to determine the impact, if any, of the selected channel of communication on group affective processes. In going from face-to face communication to e-mail communication, for example, there are far fewer cues that a receiver can use to interpret and appraise a given message. Primary investigations explored: a) whether communication channel interferes with a receiver's ability to recognize the sender's emotional state, and b) whether communication channel influences the likelihood of the receiver to converge affectively with the sender. Empathy was also examined as a possible moderator of these relationships.

Affect

Affect is at the core of all human interaction. For this reason, it is critical to understand the implications and consequences of such phenomena which are at play in a multitude of settings including at home, in the community, and, possibly most importantly, in the office. Barsade and Gibson (2007) describe affect as an overarching construct comprised of a broad range of feelings which individuals experience. These feelings may include both feeling states (in-the-moment, short-term affective experiences), and traits (more stable tendencies to feel and act in certain ways; Barsade & Gibson, 2007). Affect, therefore, can be thought of as an umbrella term that includes moods, emotions, and dispositional states.

Feeling states and traits play a huge role in how we communicate with one another, influencing our body language, vocality, and word choice (Sy, Côté, & Saavedra, 2005). The study of affect is burgeoning in organizational behavior (Barsade & Gibson, 2007). The foundational and permeating role that affective processes play in individual and group behavior is undeniable. Positive affect boosts morale in the workplace through increased likelihood of employee participation in pro-social and organizational citizenship behaviors (OCBs; Motowidlo

& Van Scotter, 1994). Furthermore, positive affect has been linked to increased creativity and efficiency during cognitive processing (Schiffrin & Falkenstern, 2012).

Affective feeling states include both emotions and moods, whereas trait affect (i.e., dispositional affect) refers to an individual's relatively stable inclination toward experiencing positive and negative moods and emotions (Barsade & Gibson, 2007). Although dispositional affect may also play a role in interpersonal interactions and contagion, the focus of this study was on affective feeling states, including both moods and emotions.

Group Affect. Traditionally, affect has been examined at the individual level. However, recent studies have shown that group affect can be generated through social interaction (Barsade & Gibson, 2012; Klep, Wise, & Flier, 2011). This is quite sensible, given the interpersonal functions of affective states. Group affect has been defined as the “affective state arising from a combination of the group's top-down components (i.e., the affective context) and its bottom-up components (i.e., the affective composition of the group) as transferred and created through explicit and implicit affective transfer processes” (Barsade & Gibson, 2012, p. 119). Transfer processes may include emotional contagion (“catching” another's emotions); vicarious affect (experiencing the affective state of another); behavioral entrainment and interaction synchrony (tendency to automatically synchronize behavior to match that of others); and affective impression management (goal-oriented management of one's surface-level affective displays; Barsade & Gibson, 2012). These processes can all initiate transfer, resulting in the generation of affect that is shared among group members. Affect-latent social interactions can serve to both intensify and regulate individual emotional responses. Furthermore, organizational outcomes can be influenced by this process at both the individual and group level.

Klep, Wise, and Flier (2011) further delineate group or “shared” affect into two categories: static and dynamic. Here, static refers to group affect that may occur as a result of similar personalities or similar affective reactions to shared events. Conversely, dynamic refers to group affect that results from interactive affective sharing processes or mechanisms among group members in which moods are constructed socially through complex interplay of contagion and comparison processes. Shaw’s (1976) description of groups, “two or more persons who are interacting with one another in such a manner that each person influences and is influenced by the other person,” lends itself to the concept shared affect within groups (p. 8). Moreover, this description fits with Klep, Wise, and Flier’s (2011) conceptualization of dynamic group affect.

When exploring group affect, the integral role that technology plays in the generation of shared affect cannot be ignored. Technological advancements continue to alter the way in which we communicate and relate to one another in the modern work environment. Instant messaging, e-mailing, and web conferencing have become central modes of communication, and are used on a daily basis. Although not many studies look into the differences in affective transfer processes across different communication channels, Cheshin and colleagues (2011) evidenced in their study that emotional contagion processes do seem to occur in groups through communication that is solely text-based. Through the mechanisms described previously of affective transfer processes, the constant sending and receiving of emotion-latent messages should continually shape and define the tone of modern work environments. For example, if a memo is sent to a team by their team leader indicating displeasure with the work that has been done, the team members will likely share in this displeasure and experience an unpleasant state. As companies expand and globalize their markets, extenuating conditions necessitate a worker’s ability to convey and interpret messages varying in format and context. Technology has altered group

composition and what it means to work together in teams (Barsade & Gibson, 2012). The present study analyzed the nature of transfer processes, specifically emotional contagion, in conjunction with the use of varying technologies to communicate.

Emotion

Emotions are feelings that arise in response to continual, implicit evaluations of situations with respect to the positive or negative implications for one's goals and/or concerns (Schwarz & Clore, 1996). Emotions are said to have an identifiable target, and to last for a limited duration. They are also often felt at a high intensity (Schwarz & Clore, 1996). Because emotions are elicited by an identifiable target or cause, they have come to be regarded as *discrete* feeling states (Frijda, 1986). The discrete emotions perspective has identified a handful of universally accepted and distinguishable emotions, each of which are supposed to have a unique set of prototypical antecedents and consequences (Ortony & Turner, 1990).

The precise number of discrete emotions as well as which emotions are considered in this classification has been debated in the literature (Ekman, 1992; Ortony & Turner, 1990). Mowrer (1960) suggested that only two basic emotional states exist, pleasure and pain. Watson (1930) included fear, love, and rage in his three basic emotions. In 1982, Panksepp proposed four basic emotions including expectancy, fear, rage, and panic, whereas Kemper (1987) has proposed fear, anger, depression, and satisfaction. On the higher end, others argue for the existence of an even greater array of emotions. Frijda (1986) has identified 18 basic emotions, including arrogance, humility, and indifference, in addition to the more common ones, such as anger and fear. However, most of the more recent research places the number of primary emotions at between five and seven. Oatley and Johnson-Laird (1987) base their theory on the primary emotions of happiness, sadness, anxiety, anger, and disgust. Ekman (1992) believes that there is sufficient

evidence for the existence of universal facial expressions for at least five emotions with the potential for six, seven, or even greater, but that some suspected emotions may warrant more research to gain empirical and theoretical support. This is not to say that other emotions do not exist, but rather that classification of basic or primary emotions is a difficult task and not all emotions will necessarily be included in such classification systems (Ortony & Turner, 1990). The present study examined anger as the primary negative emotional condition, and happiness as the primary positive emotional condition. Happiness and anger are included among most researchers' repertoire of universal or basic emotions (Ekman, 1992; Oatley & Johnson-Laird, 1987; Scherer & Scherer, 2011).

Mood

Mood is defined as a subjective feeling that is relatively diffuse and is not directed toward a specific object (Johnson, 2009). Researchers are broadly in agreement that mood differs from emotion in two distinct regards. First, moods are more pervasive than emotions. Second, moods do not always contain a specific target or focal point (Barsade & Gibson, 2007). In other words, an individual may not easily be able to attribute cause or root of their mood state, whereas in the case of discrete emotions the individual can usually link the emotion to an experience or object (Morris, 1989).

Emotion and Mood in the Workplace

While often overlooked, both mood and emotion can have a central role in substantial organizational outcomes. Positive moods have been shown to result in better performance than either neutral or negative moods (Huntsinger, Sinclair, & Clore, 2009). People who are in positive emotional states experience a wider range of thoughts and perceive a greater number of potential actions to pursue compared to those who are in a neutral or negative affective state

(Schiffrin & Falkenstein, 2012). Positive affective states have been demonstrated to increase creative and efficient cognitive processes. For example, individuals induced into positive moods were found to perform better at tasks that required creative problem-solving compared to those induced into negative moods (Isen, Daubman, & Norwicki, 1987; Rowe, Hirsch, & Anderson, 2007). Lyubomirsky, Boehm, Kasri, & Zehm (2011) found that individuals in a positive emotional state performed better on questions from the Graduate Record Exam (GRE) and on an anagram task mood when compared to individuals in a negative emotional state. Additionally, Isen and Means (1983) found that positive moods contribute to better information processing and faster decisions. Positive emotions have also consistently been linked to extraversion and sociability as evidenced by a meta-analysis of correlational, longitudinal, and experimental studies (Lyubomirsky, King, & Diener, 2005). Moreover, positive emotions have been demonstrated to boost affiliation with others and to enhance the quality of social interactions (Berry & Hansen, 1996; DeNeve & Cooper, 1998; Gable, Gonzaga, & Strachman, 2006; Harker & Keltner, 2001; Lucas, Diener, Grob, Suh, & Shao, 2000; Waugh & Fredrickson, 2006). At the individual level, these consequences of positive and negative affective states might seem small, but through shared social processes, and the resulting group-level affect, these effects are amplified to produce a broader consequential organizational impact (Vijayalakshmi & Bhattacharyya, 2011). The manner in which moods are experienced and shared socially in the work environment holds central implications as to the quality and efficiency of production at the individual, group, and organizational level. If not appropriately understood and managed, poor feeling states can have detrimental effects on processes that contribute to organizational effectiveness and efficiency.

Emotion Recognition. Emotion recognition involves forming an accurate perception of another's current affective state (Levenson & Ruef, 1992). Through this process, an individual develops a mental framework and understanding of how the other person feels. Facial, vocal, and postural cues serve as reliable and readily available indicators of others' affective states (Sy, Côté, & Saavedra, 2005). On this basis, Scherer and Scherer (2011) created the Emotion Recognition Index (ERI) for the purpose of approximating an individual's competency in detecting the emotions of another. This index consists of two subtests: one for facial and one for vocal emotion recognition. To validate the index, a study was conducted with more than 3,500 professional candidates (Scherer & Scherer, 2011). Further analyses considered gender, age, and education differences. Correlations with cognitive intelligence and personality factors were also examined. Based upon correlations between ERI scores and the position of candidates in the organizational hierarchy, Scherer and Scherer (2011) suggested that recognition competence might, to some extent, be able to predict career advancement. Understanding signals indicative of another's emotional state is important in formation and maintenance of social relationships, and has apparent adaptive advantages (Decety & Jackson, 2004). The ability to detect emotions facilitates social interactions through mutual understanding. This enhances one's ability to curtail conflict and to avoid confusion when communicating with one another, and in turn, adds to the likelihood of having successful social experiences.

Emotional Contagion. While differences between emotion and mood are useful at the individual level, in the context of team and group work this distinction may become less interpretable and more convoluted (Cheshin, Rafaeli, & Bos, 2011). More specifically, through the processes at work in group dynamics, one person's discrete emotion may form another person's mood. The resulting feeling state is likely to be broad and unfocused, with little to no

awareness of causality, and, therefore, would best be defined as a mood (Cheshin, Rafaeli, & Bos, 2011). This is where some confusion may occur and terminology can become muddled. Some of the literature refers to the transfer of affective states as “mood contagion” (Neumann & Strack, 2000; Sy, Côté, & Saavedra, 2005). However, in following with a vast majority of extant literature, the present study focused on emotional contagion (Barsade, 2002; Barsade & Gibson, 2007; Cheshin, Rafaeli, & Bos, 2011; Doherty, 1997; Kelly & Barsade, 2001; Vijayalakshmi & Bhattacharyya, 2012).

Emotional contagion is believed to arise through the mimicking of behavioral cues (Cheshin, Rafaeli, & Bos, 2011; Kelly & Barsade, 2001). Individuals may intentionally or unintentionally imitate the expressions of others and then, this imitation may result in a congruent mood state in the observer (Neumann & Strack, 2000). The unintentional imitation of emotional expressions of individuals during interaction has been referred to as “motor mimicry” (Chartrand & Bargh, 1999).

Once that imitation occurs, according to facial feedback hypothesis, the observer will experience the feelings associated with the imitated behavior. First proposed by Ekman (1973), the facial feedback hypothesis suggests that skeletal muscle feedback from facial expressions plays an influential role in regulating both emotional experience and behavior (Buck, 1980). Levenson, Ekman, and Friesen (1990) evidenced greater support for the facial feedback theory through the use of four experiments in which they examined whether voluntarily produced facial configurations associated with different emotions generated differentiated patterns of autonomic activity. In their studies, subjects received muscle-by-muscle instructions and coaching to produce facial configurations associated with anger, disgust, fear, happiness, sadness, and surprise. Heart rate, skin conductance, finger temperature, and somatic activity were all

monitored concurrently (Levenson, Ekman, & Friesen, 1990). They found that voluntary facial activity produced significant degrees of subjective experience of the associated emotion. Furthermore, findings indicate that autonomic distinctions among emotions existed both between negative and positive emotions and among negative emotions. Autonomic distinctions were also found in both male and female participants, and were stronger when voluntary facial configurations resembled actual emotional expressions most closely (Levenson, Ekman, & Friesen, 1990). More recently, these processes have been referred to as “embodied emotion.” Embodied cognition theories suggest that experiencing an emotion, perceiving an emotional stimulus, and retrieving an emotional memory all involve prominently overlapping mental processes (Niedenthal, 2007).

In short, the process of emotional contagion involves observation of another’s affective state, mimicking of a set of observed behaviors, processing of these behaviors, and then adoption of a mood state congruent to the emotional state of the other individual or individuals with whom the observer is communicating with. Hatfield, Cacioppo, and Rapson (1992, 1994) agree with this notion. They posit that as individuals interact with others, they continuously and non-consciously mimic the other's momentary emotional expressions and synchronize their facial, vocal, postural, and expressions with those of whom they are interacting with. This mimicry produces a concurrent and congruent emotional experience within the observer. This process has been coined, "emotional contagion" and defined as "a tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person's and, consequently, to converge emotionally" (Hatfield, Cacioppo, & Rapson, 1994, p. 5). Affective contagion generally occurs without deliberate or conscious processing (O'Toole &

Dubin, 1968) and the tendency to mimic the expressions of others does not appear to be learned as it is apparent even in neonates (Haviland & Lelwica, 1987; Meltzoff & Moore, 1977).

Factors Influencing Emotional Contagion. Genetics, gender, early experience, temperament, and personality characteristics should influence individual differences in the likelihood of and degree to which an observing individual's feeling state will converge to that of others (Doherty, 1997). People who may be especially likely to "catch" a feeling state are those who (a) pay close attention to others and are able to perceive others' emotional expressions, (b) interpret themselves as interrelated with others rather than independent, (c) are inclined to mimic facial, vocal, and postural expressions and, (d) whose conscious emotional experience is strongly influenced by afferent feedback (Doherty, 1997). In order to assess the likelihood of emotion contagion, Doherty (1997) established the Emotional Contagion (EC) Scale. This scale measures an individual's inclination to take on the emotional state of another. Using the EC Scale, Lundqvist (2008) assessed personality attributes in accordance with the Biosocial Model of Personality that may escalate or inhibit one's susceptibility to emotional contagion. Findings of this study indicate reward dependence and harm avoidance play a role in the susceptibility to emotional contagion. Furthermore, feeling states are more likely to be "caught" from leaders (Johnson, 2009). Leaders' emotions are particularly influential. Having a disproportionate impact on others' perceptions, messages coming from leaders possess properties which increase the likelihood of emotional contagion occurring. When the emotion is conveyed by a supervisor or someone with greater perceived power or salience as organizational members, others have greater motivation to take an interest in the emotions conveyed by these parties (Johnson, 2009).

Individual differences play an instrumental role in likelihood of emotional contagion occurring, but valence of the emotion can also influence the likelihood of affective state

transferring from one individual to another. Organizational research has evidenced that negative states may be more easily communicated and transferred than positive ones (Barsade 2002). Negative events are likely to elicit stronger and quicker emotional, behavioral, and cognitive reactivity than either neutral or positive events (Cacioppo, Gardner, & Berntson, 1997; Rozin & Royzman, 2001). People also generally pay more attention to and place greater emphasis on negative information (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Kanouse, 1984). Additional findings indicate that work groups are more likely to converge toward negative moods than they do toward positive moods (Bartel & Saavedra, 2000). In line with extant research which supports that negative moods are more salient, and consequently, more “contagious” than are positive moods, we proposed the following hypothesis:

H1) Across all communication channels, the angry condition will be more likely to have higher levels of a) emotion recognition and b) emotional contagion than the happy condition.

To assess the power of shared affect, Totterdell, Kellett, Teuchmann, and Briner (1998) investigated whether people's moods are influenced by the collective mood of their work teammates over time. Over a period of three weeks, 65 community nurses in 13 teams recorded their moods on a daily basis. A significant association between the nurses' moods and the collective mood of their teammates was demonstrated through a pooled time-series analysis, when removing hassles from the relationship. This relationship was stronger for nurses who were older, were more committed to their team, perceived a better team climate, or experienced less hassles with teammates. The findings suggest that people's mood at work can become linked to the mood of their teammates.

Considering the support found for the existence of emotional contagion (Barsade, 2002; Cheshin, Rafaeli, & Bos, 2011), coupled with the negative impact that mood can have on individual behavior (Gonzalez, 2005), it is necessary to look at how a communication channel might influence the likelihood of emotional contagion. Emotional contagion will be examined in terms of both positive and negative emotional states. Both positive and negative manipulations will use high level of activation in accordance with the *circumplex model* (Russel, 1980). Feeling states can be understood in terms of both valence (extent to which the state is positive/pleasant or negative/unpleasant) and activation level (potency). Russel's (1980) *circumplex model* provides a basis for classifying emotions in terms of both activation level and hedonic tone. As previously stated, the two emotions examined in the present study were happiness (positive) and anger (negative).

Communication Channel

Modern communication involving organizational players, which includes group decision and negotiation, is regularly conducted via interactive technology. Through such mediums, affective state, interaction, and negotiation meet numerous new possibilities and limitations. For example, Martinovski (2009) poses this question: "If emotions are hard to deal with in face-to-face situations, how do they function in new media?"

In the contemporary workplace, there are both numerous and ever-increasing channels through which employees communicate with one another. Due to the trend toward global markets and increased telecommuting, workers rely on usage of e-mail, phone, and web-based video conferencing to relay messages. In the literature, communication channels such as e-mail and instant message have most frequently been termed as computer-mediated (Riordan & Kreuz, 2010) or text-based communication (Cheshin, Rafaeli, & Bos, 2011). Previously, phone and

audial communication has been referred to simply as audio recordings or audio files (Ben-David, Thayapararajah, & van Lieshout, 2013). Other communication channels which are discussed in extant literature include face-to-face, video recordings, video conferencing, and web-based (Fineman, Maitlis, & Panteli, 2007; Martinovski, 2009; Paulmann & Pell, 2011). For the present study, the terms used to describe the text, audio, and video conditions were text-based, audio-based, and video-based, respectively.

Alternatively, in defining communication channels, Paulmann and Pell (2011) made use of a different set of categorization which involves the modality of the communication. The notion of unimodal, bimodal, and multimodal communication is based on the premise that different channels offer varying amounts of stimuli within a given form of communication. Unimodal refers to communication in which one form of stimuli is present. This type of communication generally takes on a text-based format, where semantics are the only indication of the deliverer's mood. Bimodal communication makes use of two forms of stimuli. In these channels, a message receiver may make use of semantics, as well as vocal hints, also known as prosody. Prosody refers to the timing, stress, and intonation of auditory speech (Cvejic, Kim, & Davis, 2012). Lastly, multimodal refers to communication latent with multiple stimuli. Multimodal channels utilize stimuli including facial, semantic, and prosodic (vocal/auditory) cues (Paulmann & Pell, 2011).

A handful of studies have looked into differences of how affect is interpreted among varying channels. For example, in 2008, Byron distinguished two systematic biases in people's reading of the emotion conveyed in e-mail messages. In the case of neutrality bias, people fail to recognize positive emotions and evaluate them as neutral, whereas the instance of a negativity bias occurs when people attribute greater intensity to negative emotions. Findings also indicated

that people appear to be unaware of these biases (Byron, 2008). In a separate series of studies, Kruger and colleagues showed that senders typically overestimate their ability to convey anger and other emotions in e-mail messages (Kruger, Epley, Parker, & Ng, 2005). In another study, Riordan and Kreuz (2010) explored reasons for choosing among face-to-face, asynchronous e-mail, or synchronous instant message channels to transmit emotional information with negative or positive valence. Their findings indicate that the most common reason for choosing face-to-face over channels of computer-mediated communication was the ability to use more nonverbal cues, whereas the most common reason for choosing a computer-mediated channel over face-to-face was to shield oneself from the message recipient. Furthermore, face-to-face was judged as more effective, more personal, more comfortable, and less permanent than computer-mediated channels (Riordan & Kreuz, 2010). The present study further explored a receiver's response to an emotion-latent message with regard to communication channel and resulting mood of the receiver.

In a study that did examine varying modes of external stimuli, Paulmann and Pell (2011) found that the presence of greater stimuli (e.g., multimodal as opposed to both bimodal and unimodal and bimodal as opposed to unimodal) increased emotional contagion. Based on the facial feedback hypothesis, as well as the concept of motor mimicry, these findings make logical sense. By increasing the amount of stimuli, both the amount and prominence of cues emitted by the sender will likely be greater. When more cues are readily available, there will also be more behaviors to copy, leading to increased capability for the observer to 'mimic' the sender.

Findings of previous studies have shown that individual behavior or actions can lead to the experience of an emotion associated with that behavior (Dimberg & Söderkvist, 2011). Researchers have long been attempting to understand the two-way relationship between bodily

changes and emotion. In 1872, Darwin first proposed that the experience of an emotion was influenced by the accompanying emotional behavior. He posited that the outward expression of an emotion intensified an emotion and that the repression of outward expression attenuated it (Darwin 1872). James (1884) contended that bodily changes directly follow experience of a stimulus, and that emotion is merely our perception of these bodily changes. To exemplify his point, he suggests that we do not run from a bear because we feel fear, but rather we feel fear because we are fleeing (James 1884).

Nearly a century later, Ekman (1973) demonstrated new evidence in support of a biological basis for emotion in the form of the facial feedback hypothesis, which was briefly discussed previously in this paper. As an extension to James' theory, Tomkins (1962) proposed that distinct subcortical affect programs responded to stimuli and controlled a quick and automatic activation of appropriate muscles and organs. Following activation, sensory feedback to the brain resulting from bodily changes yielded in the experience of different emotions.

In one study, participants were asked to rate the funniness of cartoons (Strack, Martin, & Stepper, 1988). During the study, participants were told to hold a pen either between their lips or between their teeth. Holding the pen between the lips eliminated the participants' ability to contract the zygomatic major muscle, which is the muscle used when smiling, whereas holding the pen between the teeth forced the participants to engage the muscles used when smiling. With results yielding a significant difference between the two groups, participants judged cartoons as funnier while holding the pen between their teeth. This provides further evidence of bodily function contributing to emotion formation. With the use of fMRI, Hennenlotter and colleagues (2009) evidenced that reduced facial muscle activity due to Botox treatment lessens activation of the amygdala and central circuitries of emotion. In consideration of these theoretical foundations

and experimental evidence, for emotional contagion to occur, the manifestation in the form of motor mimicry establishes ideal circumstances for emotional contagion to occur. Previous findings of higher emotional contagion where greater stimuli were present, as well as the observed relationship among physiological response and emotion, led to the following hypotheses:

H2a) Emotion recognition will be highest in the video-based condition, followed by the audio-based condition, and finally the text-based condition.

H2b) Emotional contagion will be highest in the video-based condition, followed by the audio-based condition, and finally the text-based condition.

Empathy

Empathic ability is believed to have played an adaptive role in our ancestors' survival and presently aids people in their interactions with others in order to initiate, build, and maintain relationships (Decety & Jackson, 2004). During the course of evolution, organization of neural activity in the mammal and primate brain has been shaped by need for rapid evaluation of others' motivations (Decety & Jackson, 2004). Empathy has been previously defined as, "the understanding and sharing in another's emotional state or context" (Cohen & Strayer, 1996). This definition suggests two distinguishable components, which have been termed in the literature cognitive empathy and affective empathy (Reniers, Corcoran, Drake, Shryane, & Vllm, 2011). Cognitive empathy refers to the comprehension of other people's experience, whereas affective empathy refers to the ability to vicariously experience the emotional experience of others (Reniers et al., 2011). Blair (2005) further teased apart the definition of empathy into three main systems with the inclusion of motor empathy in addition to cognitive empathy and emotional (affective) empathy. Blair (2005) describes motor empathy as the action of mirroring

the motor responses of the observed person. Mimicking behaviors bind people together, and fosters liking and smooth interaction (Decety & Jackson, 2004). Mimicking has been linked to increased liking of the mimicker as well as increased prosocial orientation in general (Decety & Jackson, 2004). For example, in a study conducted by Van Baaren, Holland, Kawakami, and Van Knippenberg (2004), participants who had been mimicked by the researcher were more helpful and generous toward other people those participants who were not mimicked. Additionally, they found that these beneficial consequences of mimicry were not limited to behavior directed toward the mimicker, but also included behavior directed toward people who were not directly involved in the mimicry situation (Decety & Jackson, 2004). The development of interpersonal relationships is dependent upon synchronization of verbal and nonverbal behavior. The success of routine, everyday interactions is often contingent on the extent to which synchronization of individuals' behavior toward one another has occurred (Thompson & Fine, 1999). As such, empathy has adaptive and strategic advantages, which may have played a role in survival for our ancestors, but now has apparent applications in the work context.

Empathy has traditionally been thought of as a trait, which contends that it is an invariable and person-specific quality (Decety & Jackson, 2004). When considered as a trait, empathic ability is a fairly stable characteristic within individuals and can be expected to remain consistent across settings and time. However, studies of physiological reactions to experiencing the emotions of others indicate that empathy may also have state-based properties above and beyond trait-based characteristics. These state-based properties were the focus of the current study.

State Empathy. Contemporary research has brought into view the possibility of empathy as not only a trait, but as a state (Nezlek, Feist, Wilson, & Plesko, 2001). In accordance with this

thread of consideration, empathy can also be dependent upon circumstantial and situational variables, and may fluctuate from day to day or from situation to situation. Physiological symptoms may substantiate calls for recognition of empathy as a state in addition to the long-standing, vastly-researched trait empathy.

Empathic processes have been examined in terms of their effects on skin conductance and heart rate. In one study, researchers aimed to determine how empathic experience, as measured by skin conductance, relates to prosocial behavior (Hein, Lamm, Brodbeck, & Singer, 2011). Hein and colleagues measured skin conductance responses (SCRs) as well as affect ratings in participants while they were either receiving painful stimulation or observing pain being inflicted on another individual. Later, they could choose to prevent the infliction of pain in the other by enduring pain themselves. Their findings indicate that the strength of empathy-related indirect skin conductance responses is linked to later selection to help the other. Furthermore, a person is more likely to engage in this helping behavior when there is less disparity between their skin conductance response during observation of pain in others and their skin conductance response during self-pain. Conclusions point to prosocial motivation as being fostered by the strength of the second-hand autonomic response as well as the match between that and first-hand autonomic experience.

Alternatively, Oliveira-Silva and Gonçalves (2011) sought to analyze the effects of empathy on cardiac activity. They presented a sample of forty undergraduate students with 40 emotional vignettes of positive or negative valence. Participants were then asked to select among three different empathic responses. The participants' electrodermal and cardiac responses were measured during this time. The study findings yielded that higher levels of empathy (as was observed and classified by two experts) are linked to increased cardiac activity.

Ono, Fujita, and Yamada (2012) further evidenced that expressing empathy in response to another person's negative emotions were related to increased physiological activity. Above and beyond skin conductance and increased cardiac activity, however, these researchers found that empathy was also related to subjective stress and that physiological responses to empathy were dependent upon cognition of the different subjective factors. For example, cognition of sharing negative emotions was related to increased activity in the right temporal region of the brain and cognition of understanding negative emotions inhibited activity in the bilateral frontal region.

In a given situation, where empathic process is taking place, many studies have supplied evidence of physiological symptoms as a result of exposure to another's affective state (Decety & Jackson, 2004; Levenson & Ruef, 1992). As part of the empathic process, these physiological indicators imply momentary response to circumstance, which may afford recognition and acceptance of this expanded view of empathy.

Empathy was examined to assess the effect of empathic processes during emotion recognition and contagion. The two major components involved in state empathy are perspective-taking and actual sharing in the affective sentiments of the other person (Shen, 2010). The perspective taking component is referred to as cognitive empathy and encompasses recognizing, comprehending, and adopting another person's point of view. The sharing of another's affective state is referred to as affective empathy, and consists of activation and experiencing of another's feeling states (Shen, 2010). Therefore, emotion recognition was expected to relate to cognitive empathy in that cognitive empathy involves establishing an understanding of what emotion is being felt by a target individual. Both cognitive empathy and emotion recognition consist of an interpretation of feelings of the other that is made by the

observer. Similarly, emotional contagion was expected to relate to the affective component of empathy. Affective empathy involves experiencing the emotional state of another, which would be necessary in the occurrence of emotional contagion as the expected result of emotional contagion is that the observer experiences similar feelings. These suspected relationships contributed to the final hypotheses with empathy as a moderator in the relationship between communication channel and emotion recognition and emotional contagion:

H3a) The relationship between communication channel and emotion recognition will be moderated by state cognitive empathy such that this relationship will be stronger when state cognitive empathy is higher.

H3b) The relationship between communication channel and emotional contagion will be moderated by state affective empathy such that the relationship between the communication channel and emotional contagion will be stronger when state empathy is higher.

In sum, the purpose of this study was multifold: 1) to detect the conditions under which emotional contagion occurs, 2) to identify if a relationship exists between the communication channel and emotional contagion, and, finally, 3) to see what role, if any, state empathy plays in this process. Furthermore, many prior research efforts have analyzed these concepts without regard to setting (Levenson, Ekman, & Friesen, 1990; Lundqvist, 2008; Sonnby-Borgstrom et al., 2008), whereas the current study imitates work characteristics to achieve some level of environmental fidelity and in turn, greater face validity.

Method

Participants

Participants were undergraduate students at Auburn University enrolled in psychology courses. Participants were recruited through SONA, an online research participant registration program. Participants were granted extra credit for participating in the study. The sample consisted of 182 undergraduate students in a large public Southeastern university in the U.S. In this sample, 81% were female; the average age was 20, and the average undergraduate GPA was 3.31. A vast majority of the sample self-identified as Caucasian (n = 153), followed by African American (n = 15), Asian American/Pacific Islander (n = 7), Hispanic (n = 6) and other (n = 1).

Surveys were completed by 231 participants. Participant data were excluded if the participant a) indicated that they were taking the survey on an incompatible device (anything other than a computer or laptop), b) reported that they were not in a quiet place free of distractions, or c) responded to the manipulation check incorrectly that the supervisor was female. Eleven cases which did not meet the aforementioned criteria were removed. Additionally, participants were excluded from the analyses if their completion time deviated by approximately 14 minutes in either direction from the mean (about 20 minutes). The reason behind this is that if a participant took too long or too brief to complete the survey, it is likely they were rushed, distracted, or did not take the survey seriously. Thirty-eight cases were removed from the analyses due to these time cut-offs. Accounting for all exclusion criteria, the final sample size was concentrated to 182 participants, as stated above.

Procedure

This was an online study administered through Qualtrics. Participants were directed to ensure that they were in an environment with a high level of privacy and no distractions. Participants were then told that they were to assume the role of a newly hired employee of a sales organization with members that are spread across different geographical locations.

Participants were told that their supervisor had sent them a message to welcome them to the company and to explain their role and tasks as a new employee. The supervisor was a hired actor who was recorded saying the happy and angry messages, which were then used for both the audio and video formats. The same happy and angry messages were presented in the format of an e-mail for the text-based format. The supervisor appeared to be a middle-aged (40-50 years old) white male. Introducing non-traditional cultural, racial, or gender characteristics may have presented a host of undesirable covariates. For this reason, a supervisor with the aforementioned traits was utilized to deliver the message. To achieve the same pitch, tone, and inflection between the audio and video conditions within the same emotion states, the video was used to create an MP3 audio file.

To create the messages, words were acquired and selected from the Affective Norms for English Words (ANEW), a database of 1,000 words (Scott, O'Donnell, & Sereno, 2012). Emotion words were chosen in accordance with their arousal and valence values. The ANEW database is a collection of words that each have associated ratings for arousal, from 1 (low) to 9 (high), and for valence, from 1 (low, having a negative meaning) to 9 (high, having a positive meaning). Words were selected in both conditions if arousal values were within the range of 6 to 9 for positive or negative words (depending on condition). For the emotion conditions, valence values ranged from 6 to 9 for the happy condition, and 1 to 4 for the angry condition. Messages were then created and validated by a representative sample of the target population. The messages each comprised of exactly 172 words with 21 of those words coming directly from the ANEW database having the appropriate arousal (between 6 and 9) and valence (between 1 and 4 for the negative message and between 6 and 9 for the positive message).

In a pilot study, a survey was presented to undergraduate psychology students as an educational experience and an opportunity to earn extra credit. Responses were collected from a total of 18 individuals. Students responded to questions about comprehensibility and the overall tone of the message. Each of the two overall messages, as well as all of the words used in the messages, were confirmed to be comprehensible to the average college student. Furthermore, this pilot data suggested that, on average, the tone of the message was recognized. For administration of the actual study, messages will have the greeting, “Hello,” and close with, “Take care.” This will provide consistency among all conditions in each of the three communication channels.

The channel through which the message was delivered was randomized across participants using the randomization logic on Qualtrics software. Participants received either a text-based message (akin to an e-mail), an audio-based message (resembling a voicemail message), or a video-based message (representative of a video conference). The messages also varied in the emotional state being expressed. The emotional state conveyed was either anger (activated negative) or happiness (activated positive). The emotion condition a participant receives was also randomized. The same verbiage was held constant across all three communication channels. Therefore, all ‘happy’ messages were the same and all ‘angry’ messages were the same, with the only difference being the channel through which the message was expressed. Upon completion of observing the message, participants responded to the scales described below, which seek to measure emotion recognition, emotional contagion, and state empathy (cognitive and affective).

Measures

Emotion recognition measure. The degree to which an emotion is recognized was measured using modified versions of the PANAS-X for happiness and anger. To evaluate these, adjectives from the Positive and Negative Affect Schedule—Expanded Form (PANAS–X; Watson & Clark, 1994) were utilized.

Six adjectives based on the PANAS-X joviality scale will be used to assess happiness. These six items included: happy, joyful, delighted, cheerful, excited, and enthusiastic. This scale was created by Clark et al. (2013). The current study found mean coefficient alphas of .98 for this scale. Selected adjectives were used to assess anger based on the PANAS–X as well (Rodell & Judge, 2009; Watson & Clark, 1994). This measure consisted of two items: angry and hostile. The current study found a mean coefficient alpha of .93 for this scale.

In the current study, these scales were used in a manner different from how they are most frequently used. Instead participants were asked to approximate the supervisor’s conveyed emotion in the message. These results should have indicated whether participants were able to recognize the supervisor’s emotion. Directions were rephrased to apply to the supervisor’s emotion as opposed to self-report of one’s own emotion. Therefore, participants were asked to rate: “To what extent do the following adjectives describe your supervisor’s current emotion?” A 5-point Likert-type scale was used for both happiness and anger ranging from 1 (*very slightly or not at all*) to 5 (*extremely*).

Emotional contagion measure. Emotional contagion was assessed with the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS is a well-established method of briefly administering and measuring positive and negative affect. This scale is a self-reporting questionnaire consisting of 20 items: 10 Positive Affect (PA) items and 10 Negative Affect (NA) items (Kwon, Kalpakjian, & Roller, 2010). The PANAS is designed to

assess the mood of a participant at a specific point in time, asking participants to describe how accurately the items reflect their current feelings.

The PANAS can be applied different intervals of times ('today', 'during the past few days,' 'during the past year,' 'in general or on average'; Leue & Lange, 2011). In the present study, participants were asked to report the degree to which certain adjectives describe how they are currently feeling (i.e., 'right now'). Anchors used for this scale ranged from 1 (*very slightly or not at all*) to 5 (*extremely*). The internal reliability and validity reported by Watson, Clark and Tellegen (1988) is good. In the current study, the PA sub-scale had a Cronbach's alpha of .92 and the NA sub-scale had a Cronbach's alpha of .90. To date, the PANAS has been extensively used as a self-rated measure of affect since its inception in 1988.

State empathy measures. State affective empathy was measured using a modified version of the scale created by Shen (2010). Anchors ranged from 1 (*very slightly or not at all*) to 5 (*extremely*) to maintain consistency with the PANAS, whereas their scale used anchors ranging from 0 (*not at all*) to 4 (*completely*). This scale was established specifically to measure a recipient's vicarious experience during message processing. The first four items measure affective empathy. Items include: "The supervisor's emotions are genuine." The next four items measure state affective empathy. Items include: "I recognize the supervisor's point of view."

In its entirety, this scale demonstrated good external and internal consistency, as well as convergent and divergent validity (Shen, 2010). Two studies assessed and were used to validate this scale. It is important to note that the whole scale also includes an "associative empathy" subscale consisting of 4 items. This subscale was not used in the current study as it is not relevant to the hypothesized relationships. The alpha reliability found in the current study for the state cognitive empathy and state affective empathy were .87 and .80 respectively.

Results

Two 3x2 analysis of variance (ANOVA) procedures were conducted. The first had communication channel and emotion condition as fixed factors and emotion recognition as the dependent variable. The “recognition” variable was computed based on individual responses to items. If the individual was assigned to the happy condition, the summed and averaged response to items in the PANAS-X for happiness scale was utilized in the recognition variable column. If the individual was assigned to the angry condition, responses to items in the PANAS-X for anger were utilized. The next 3x2 ANOVA was run with communication channel and emotion condition as fixed factors, this time with emotional contagion as the dependent variable. A “contagion” variable was created that used an individual’s summed and averaged responses to the ten positive affective items if that individual was in the happy condition and used an individual’s summed and averaged responses to the ten negative affective items if that individual was in the angry condition.

These ANOVAs for emotion recognition and emotional contagion are shown in Table 1. As can be seen, the happy message resulted in statistically higher emotion recognition and emotional contagion than the angry message, $F(1,176) = 19.44, p < .001, \eta^2 = .08$ and $F(1,176) = 94.04, p < .001, \eta^2 = .33$, respectively. This was opposite of the expected result posited by hypothesis 1. Therefore, hypothesis 1 was not supported, but the results are of interest and may warrant further research into the circumstances that may have affected findings.

Results also suggest that communication channel had a significant effect on both emotion recognition and emotional contagion, $F(2,176) = 9.00, p < .001, \eta^2 = .08$ and $F(2,176) = 3.37, p = .037, \eta^2 = .02$, respectively. The audio condition resulted in significantly more emotion

recognition than the text-based condition [Mean Difference (MD) = .65, $p < .001$]. This lends partial support to hypotheses 2a. The audio condition was anticipated to result in higher recognition than the text-based condition. However, the video condition was hypothesized to result in the highest amount of recognition. No significant difference was found between the text-based condition and the video condition (MD = .13, $p = .423$). The audio condition also resulted in significantly higher emotion recognition than the video condition (MD = .52, $p = .001$). Hypothesis 2b was also partially supported. The audio condition resulted in the higher emotional contagion than both the text and video condition (MD = .35, $p = .016$ and MD = .28, $p = .048$, respectively). Again, no significant difference was observed between the text-based and video-based condition (MD = .01, $p = .642$). Thus, partial support was found for both hypothesis 2a and 2b.

Lastly, the moderation hypotheses, hypothesis 3a and 3b, were tested. A moderation effect of state cognitive empathy was not found for the relationship between communication channel and emotion recognition, $F(42,134) = 41.87$, $p = .11$, $\eta^2 = .48$. However, state affective empathy did significantly moderate the relationship between communication channel and emotional contagion, $F(45,170) = 1.8$, $p = .01$, $\eta^2 = .38$. When individuals were higher as opposed to lower in state affective empathy, they were more likely to converge with the emotion of the supervisor. Although higher affective empathy resulted in greater emotional contagion for all communication channels, the slopes for each of the three communication channels differed with text-based showing the greatest increase in emotional contagion with regard to affective empathy. This is depicted in Figure 1. This lends support for hypothesis 3b, whereas hypothesis 3a was not supported.

Although not originally hypothesized, the results in Table 1 indicate that there was a significant interaction effect between emotion conveyed and communication channel on emotion recognition, $F(2,176) = 9.19$, $p < .001$, $\eta^2 = .08$, and on emotional contagion, $F(2,176) = 4.25$, $p = .02$, $\eta^2 = .03$. The interaction plots were obtained and are displayed as Figure 2 and Figure 3. Conveyed emotion interacts with communication channel such that when happiness is the emotion conveyed, the differences across communication channels are no longer significant. Plots were also obtained of emotion recognition (Figure 4) and emotion contagion (Figure 5) across all six treatment conditions. These plots shed more light on the interaction effect as well as highlight the differences between the three happy message conditions and the three angry message conditions.

Discussion

The results indicate that the happy message conditions was more readily recognized and resulted in more emotional contagion than the angry message conditions. The first hypothesis was formed because much of the extant research suggests that negative information is more salient (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Kanouse, 1984). However, there is some research suggesting the exact opposite (Vijayalakshmi & Bhattacharyya, 2012). There are a few possible explanations for the results found in the current study. First, context may play an integral role. For example, Kahneman and Tversky's (1979) work on prospect theory suggests that people are loss averse and that subjects tend to place greater emphasis on loss than gains in situations where risk is involved. In the current study, the individual was not in a gain-loss position which puts them at any direct risk. Rather, the employee is merely hearing positive or negative information. Thus, the negative information is not necessarily directed at the new employee. If they do not perceive themselves as in "trouble", then this negative information may

not seem as salient or personally relevant. Second, it may serve as a protective mechanism for an individual to positively frame information coming from coworkers and supervisors. Coworkers are people with whom an individual will likely have much further contact with, and therefore it will be to the benefit of an individual to enjoy the people he or she works with. In support of this claim, Barge and Schlueter (2004) found that there may be a positive bias in the socialization discourse associated with organizational entry. In their survey study asking new employees to report information about memorable messages received during their socialization to an organization, approximately 91% of participants perceived the sender's intent as benevolent (Barge & Schlueter, 2004). Lastly, base-rate information was not collected. People may have either been in a better mood to begin with before starting the study or influenced by social desirability bias while reporting on their current affective state. A way to test this explanation would be to collect pre-post measures and test the gain in either direction (increase in positive affect for the happy conditions and increase in negative affect for the angry conditions).

The audio conditions, as predicted, resulted in more emotion recognition and emotional contagion than did the text conditions. This was predicted originally because with audio compared to text information, you have added contextual information such as pitch, inflection, and tone. However, the audio conditions also experienced greater emotion recognition and contagion than did the video condition. Although video adds greater message-related stimuli, such as posture, hand gestures, and facial expression, there is also increased irrelevant stimuli that may have distracted from the message. For example, this would be the first time the participant is taking in the looks of their supervisor and their environments. The participant may be distracted by hair and eye color, or what things their supervisor has in their office such as bookshelves and a briefcase, whereas greater focus on the message itself is afforded by the audio

conditions. The significant interaction between communication channel and conveyed emotion reveals that the audio condition was particularly prominent in the angry condition.

There was a significant moderating effect of affective state empathy on the relationship between communication channel and emotional contagion. This lends support that a message receiver's current affective state in combination with the communication channel used to transmit a message may influence the degree to which the receiver converges with a sender's affective state. Results suggest that cognitive state empathy did not moderate the relationship between communication channel and emotion recognition as predicted. Thus, the understanding another's emotional state does not necessarily influence the impact of communication channel with regard to emotion recognition. Perhaps cognitive trait empathy would have played more of a role, but this measure was not collected for the current study.

Limitations of the Present Study

One limitation of this study is that it was an online study. This introduces the potential for technical difficulty that may have impeded the participants' experiencing of the intended manipulation. Manipulation checks such as asking the supervisor's gender were included in an attempt to safeguard against some of these cases. However, there is no way of knowing whether a participant who passed the manipulation checks experienced a technical difficulty and chose not to report it. Furthermore, because the current study did not utilize an actual sample of newcomers, participants were given fake roles and identities to assume throughout the study. The authors of this study suggest a related field study to test similar hypotheses. Results with a sample of actual newcomers to an organization would be interesting to compare to results found in the current study. However, a field study would not be without its own set of limitations in terms of generalizability across organizations and types of careers.

Another limitation of the current study pertains to the sample collected. A vast majority of the sample reported that they were Caucasian (84%) and/or female (81%). Although there are some organizations that are highly Caucasian and highly female, this may limit the generalizability of results to many organizations. This was a sample of college students with limited work experience (only 26% of the sample has ever worked full-time). The sample, in this way, is representative of individuals who would be starting one of their first, if not their first, full-time employment positions.

Conclusion

Affect is a field of study that does appear to be receiving more attention. Results of this study imply that more research is needed in terms of whether context may influence the salience of positive versus negative events. Additionally, there is not much current research on how the communication channel through which a message is conveyed effects the interpretability on part of its receiver. Current workplace trends that seem to be on the rise include telecommunication, globalized organizations, and team-based work. This necessitates further study of the effects of communication channel. How we communicate with coworkers will be an increasingly relevant construct, and one which may have implications for practice.

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TABLE 1

ANOVAs with Emotion and Communication Channel as Fixed Factors

Source	DV: Emotion Recognition					DV: Emotional Contagion				
	SS	<i>df</i>	F	p	η^2	SS	<i>df</i>	F	p	η^2
Emotion	15.65	1	19.44	<.001	0.08	58.69	1	94.04	<.001	0.33
Channel	14.48	2	9.00	<.001	0.08	4.21	2	3.37	.037	0.02
Emotion*Channel	14.79	2	9.19	<.001	0.08	5.30	2	4.25	.016	0.03
Error	141.63	176				109.84	176			

Note. R-square = .242 with emotion recognition as the dependent variable and R-square =.381 with emotional contagion as the dependent variable; DV = Dependent Variable.

TABLE 2

ANOVA with Cognitive Empathy as Moderator and Emotion Recognition as DV

Source	SS	df	F	p	η^2
Emotion	16.50	1	22.16	<.001	0.19
Channel	18.08	2	12.14	<.001	0.21
Emotion*Channel	9.62	2	6.46	.002	0.11
Channel*Cognitive Empathy	41.87	42	1.34	.108	0.48
Error	99.77	134			

Note. R-square = .466; DV = Dependent Variable.

TABLE 3

ANOVA with Affective Empathy as Moderator and Emotional Contagion as DV

Source	SS	df	F	p	η^2
Emotion	24.64	1	47.56	<.001	0.22
Channel	4.41	2	4.25	.016	0.04
Emotion*Channel	4.57	2	4.42	.014	0.04
Channel*Affective Empathy	41.98	45	1.80	.005	0.38
Error	97.55	131			

Note. R-square = .618; DV = Dependent Variable.

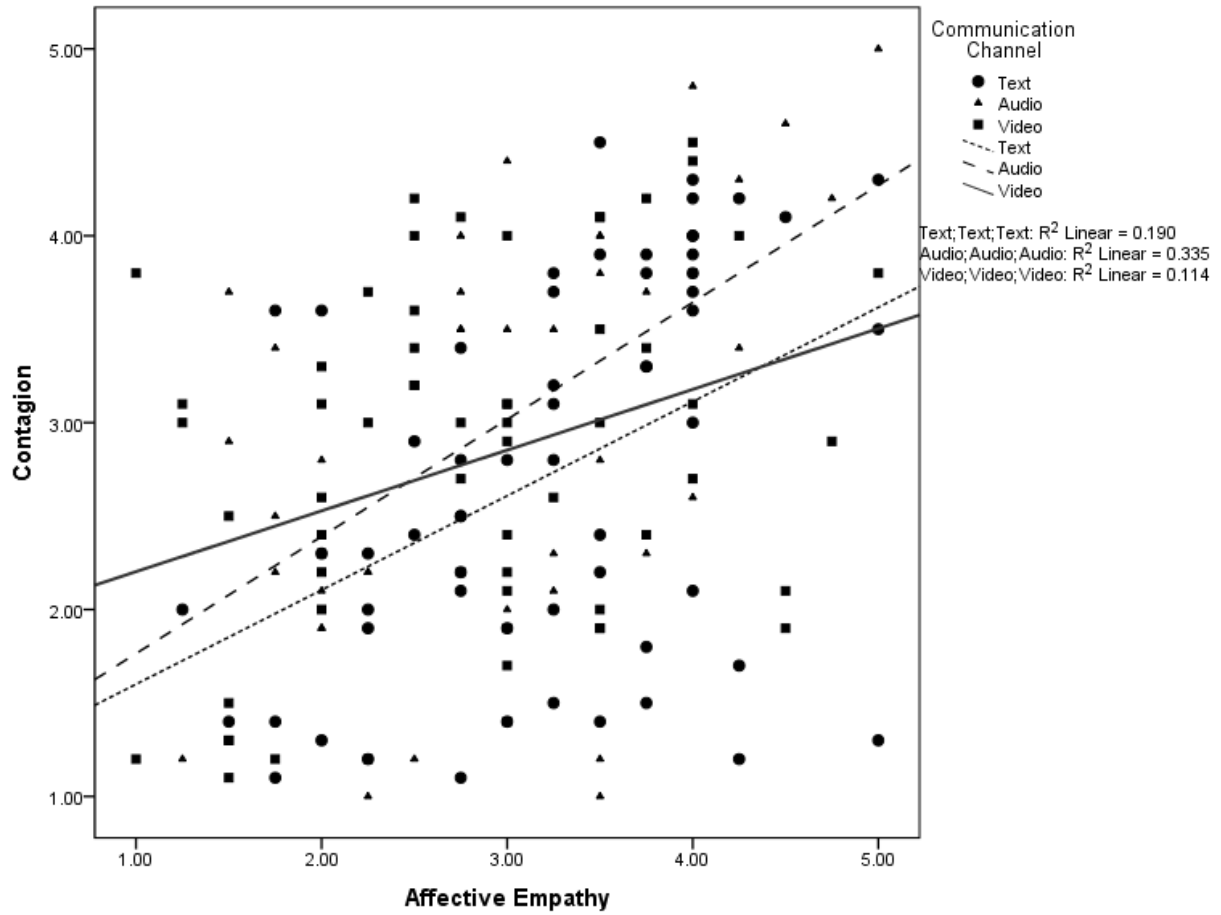


Figure 1. Communication Channel x Affective Empathy in terms of Emotional Contagion.

Note. This graph depicts linear fit lines by communication channel subgroups.

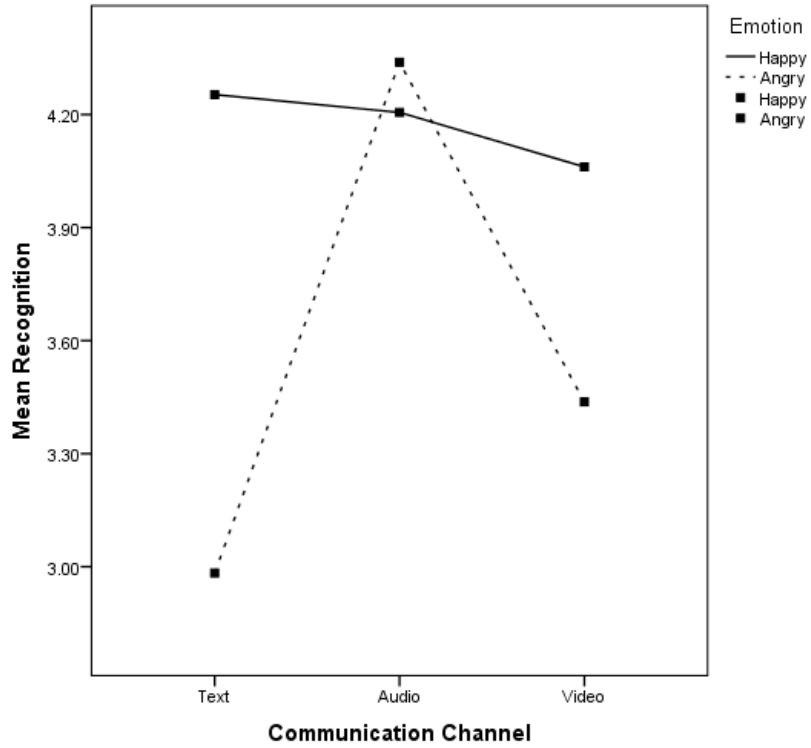


Figure 2. Communication Channel x Emotion in terms of Emotion Recognition.

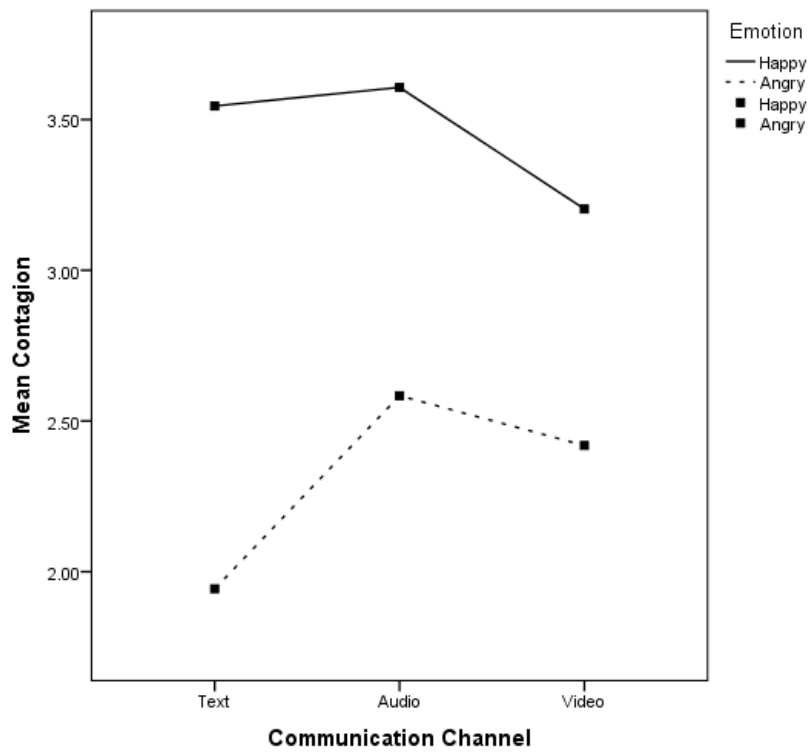


Figure 3. Communication Channel x Emotion in terms of Emotional Contagion.

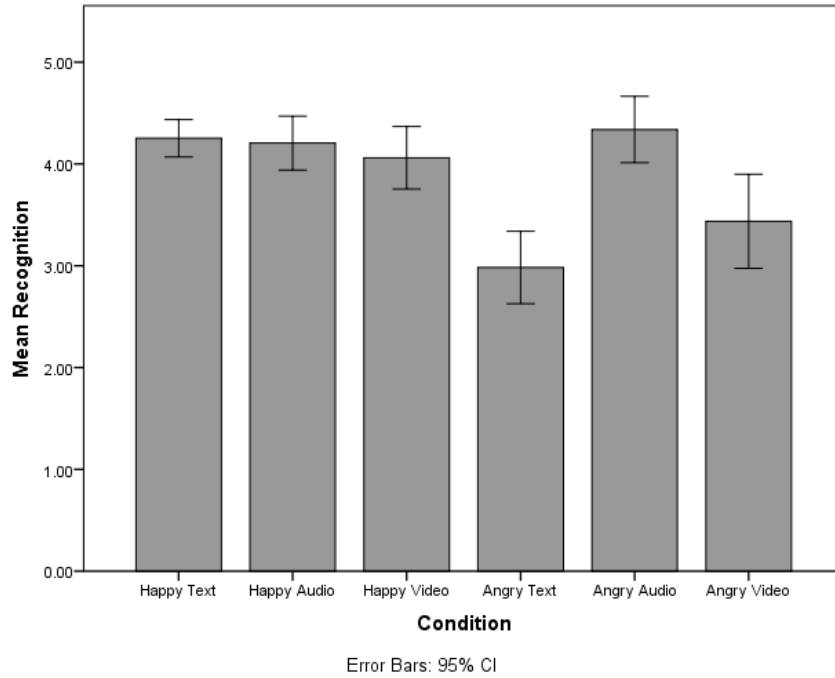


Figure 4. Emotion Recognition across all Treatment Conditions.

Note. No significant differences exist among communication channels in the happy conditions.

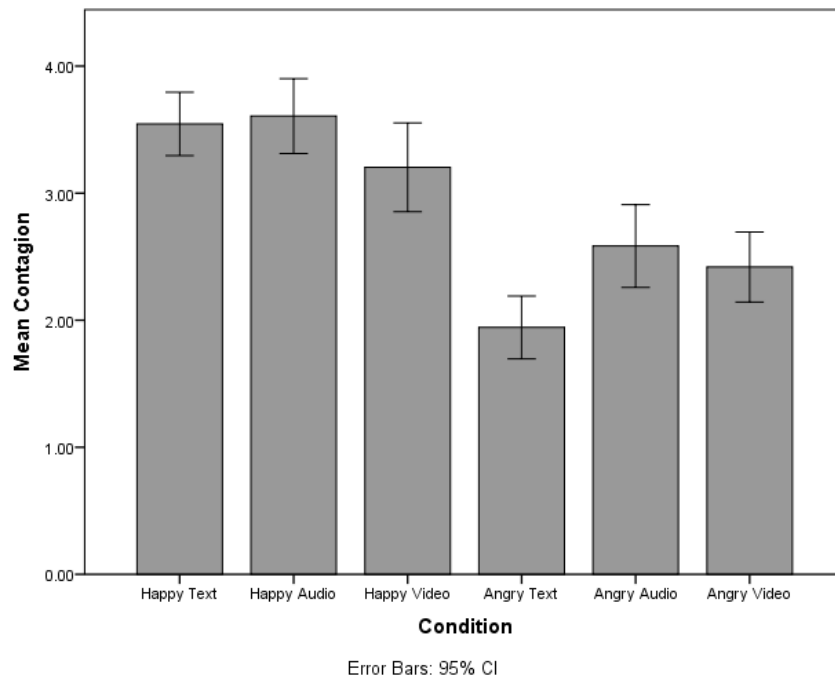


Figure 5. Emotional Contagion across all Treatment Conditions.

Note. No significant differences exist among communication channels in the happy conditions.

Appendix A

Vignette:

In this study, you will be asked to assume the role of a newly hired employee. It is encouraged that, to the best of your ability, you stay true to your character. It may help to think of a time when you were in a similar situation, and how you would feel your first day on the job.

You have recently been hired by *Textbook Now*, a company specializing in the sales of textbooks. This company employs individuals all across the globe and therefore, it is necessary for individuals to communicate virtually on a fairly regular basis. You will be making sales calls, sending e-mails to potential clients, and developing materials for presentations. You are to imagine you have already had an online orientation/introduction to your job duties.

During your time at the company, you will work closely with one supervisor and a team of four other individuals who all work under him as well. He is currently located in London, England and so most communication will be coming to you virtually.

You will now be receiving a message from your supervisor. This message is the first contact you are receiving from him. Following the message, you will be asked a few questions about your experience as a new employee and about your supervisor.

Please observe the message on the following page and then respond to questions that pertain to this message.

Appendix B

‘Happy’ Condition

Message:

It’s my great **joy** to welcome you to our company. There has been much **excitement** within our team to be gaining a new employee who possesses so much **talent**. We are all in **agreement** that we are very **lucky** to have you. I was quite **impressed** with your **outstanding education** credentials as well as your **passion** for the field. I **hope** you will learn to not see me just as your supervisor, but you will come to know me as a **friend**. I am **confident** you can fit right in and contribute to the **success** of our company. The motto that we share is a group **victory** is also a **win** for the individual.

That being said, I **trust** you will **learn** to become **intimate** with the work that we are doing. I foresee you quickly becoming a **leader** in many of these efforts. I **imagine** you will want to get started right away and I’m **happy** to let you do just that. If you have any questions, please don’t hesitate to ask.

*Word count: 173

**High arousal-negative words (in bold): 21

Video available at: <https://www.youtube.com/watch?v=xAqUAz2Z7yI&feature=youtu.be>

Appendix C

'Angry' Condition

Message:

I **hate** to immediately **drown** you in work, but our team is in a very **distressed** state. I **fear** that if we don't turn things around very quickly a major project is in **danger** of failing. It **pains** me to welcome you this way, but we really cannot afford to have even one more **mistake**. I'm growing increasingly **frustrated** and **disgusted** with the **filth** that people are passing off as work around here. To my **horror**, even some of my best staff members are **confused** and having **trouble**. I am **angry** we cannot seem to get on the right track. We hired you in hopes of avoiding a **crash** and **burn**.

I am **embarrassed** and feel **terrible** to put you under so much **stress** right up front. As a team we are under a lot of **pressure**, and so unfortunately you too will be **burdened** by work due to the current state of affairs. I apologize again for the not so warm welcome. If you have any issues, please direct questions to me.

*Word count: 173

**High arousal-negative words (in bold): 21

Video available at: <http://www.youtube.com/watch?v=HRLF2mo7waw&feature=youtu.be>

Appendix D

PANAS-X – Emotion Recognition

DIRECTIONS: The scale consists of a number of words that describe different feelings and emotions. Read each items and then mark the appropriate answer in the space next to that word. Indicate to what extent the following words describe the tone of the message you received from your manager. Use the following scale to record your answers.

1	2	3	4	5
Very Slightly or not at all	A little	Moderately	Quite a bit	Extremely

PANAS-X – Happiness Emotion Recognition

____ Happy
____ Joyful
____ Delighted
____ Cheerful
____ Excited
____ Enthusiastic

PANAS-X Angry Emotion Recognition

____ Angry
____ Hostile

Appendix E

The Revised PANAS – for Emotional Contagion

DIRECTIONS: The scale consists of a number of words that describe different feelings and emotions. Read each items and then mark the appropriate answer in the space next to that word. Indicate to what extent the following words describe the way you are feeling right now. Use the following scale to record your answers.

1	2	3	4	5
Very Slightly or not at all	A little	Moderately	Quite a bit	Extremely

____ Interested

____ Distressed

____ Excited

____ Upset

____ Strong

____ Guilty

____ Scared

____ Hostile

____ Enthusiastic

____ Proud

____ Irritable

____ Alert

____ Ashamed

____ Inspired

____ Nervous

____ Determined

____ Attentive

____ Jittery

____ Active

____ Afraid

Appendix F

State Cognitive and Affective Empathy

DIRECTIONS: Read each description below and then use the scale below to indicate to what extent the following descriptions are true of your new supervisor.

1	2	3	4	5
Very Slightly or not at all	A little	Moderately	Quite a bit	Extremely

1. I can see the supervisor's point of view.
2. I recognize the supervisor's situation.
3. I can understand what the supervisor was going through in the message.
4. The supervisor's reactions to the situation are understandable.

5. The supervisor's emotions are genuine.
6. I experienced the same emotions as the supervisor when watching this message.
7. I was in a similar emotional state as the supervisor when watching this message.
8. I can feel the supervisor's emotions.

Note. Items 1-4 are used to measure state cognitive empathy and items 5-8 are used to measure state affective empathy.

Appendix G

Demographics

1. What is your age? _____
2. Which of the following best describes your racial background? (Circle One)
 - a. African-American/Black
 - b. Caucasian/White (Non-Hispanic)
 - c. Hispanic
 - d. Asian American/Pacific Islander
 - e. Arabic
 - f. Native American
 - g. Other (specify) _____
3. What is your gender?
 - a. Male
 - b. Female
4. Are you currently employed?
 - a. Yes, hours per week: _____
 - b. No
5. Have you ever held a full-time job (at least 40 hours a week)?
 - a. Yes
 - b. No
6. How many years of full-time work experience do you have? _____
7. What is your cumulative grade point average? _____
8. What is your class standing?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Other (specify) _____
9. What was your ACT Composite Score (range is from 0 to 36)?
 - a. My score was _____
 - b. Did not take or can't remember score

10. What was your SAT English Score (range is from 200 to 800)?

- a. My score was _____
- b. Did not take or can't remember score

11. What was your SAT Math Score (range is from 200 to 800)?

- a. My score was _____
- b. Did not take or can't remember score

12. Politically, I consider myself to be:

- a. Liberal
- b. Moderate
- c. Conservative
- d. Other: _____

13. Politically, I would label myself a:

- a. Democrat
- b. Independent
- c. Republican
- d. Libertarian
- e. Other: _____

14. Were you suspicious about what the study was about?

- a. Yes
- b. No

15. Did you try to guess what the study was about during the task?

- a. Yes
- b. No

16. What do you think was the purpose of this study?

17. Please list your official Auburn e-mail: _____