The state of deception detection research: Two perspectives used to uncover deception detection methods

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Abstract

People are sometimes deceptive, meaning that they "intentionally, knowingly, or purposefully mislead another person" (Levine, 2014, p. 37), despite potential negative relational consequences (McCornack & Levine, 1990; Millar & Tesser, 1988) or harsh societal condemnation (Kleinmuntz & Szucko, 1984). In fact, people encounter deception on a daily basis (Serota, Levine, & Boster 2010). Sometimes this deception is especially destructive (Van Swol, Braun, & Malhotra, 2012). Therefore, many law enforcement agencies and academic disciplines are invested in the study of deception. Much of this research is conducted in order to uncover ways to detect deceptive messages and distinguish them from truthful ones. This deception detection research consistently yields the following three findings. First, that people are notoriously bad at distinguishing truthful messages from deceptive ones (Bond & DePaulo, 2006). Second, that people often over-estimate their ability to detect deception accurately (Burgoon & Levine, 2010). Lastly, people are more likely to judge a message as truthful rather than deceptive regardless of the message's veracity (Levine, Kim, Park, & Hughs, 2006). However, despite these three consistent findings, deception detection research is primarily bifurcated into two different perspectives researchers take when examining the phenomenon of deception (Burgoon & Levine, 2010) which this report labels the dominant and new perspectives. These two perspectives greatly affect the results and implications of the deception detection research being conducted. Therefore, this report examines and discusses each perspective as well as their divergent and sometimes intersecting research streams. Following this discussion, some of the most notable implications for each perspective are listed. Then some remarkable applications of each perspective are also discussed. Finally, some future research

directions are suggested. Such discussions lead to an enhanced understanding of deception detection research.

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Introduction

The Phenomenon of Deception

In *Poor Richard's Almanac* Benjamin Franklin asserted that honesty is the best policy. However, for a variety of reasons, people are not always honest (Buller & Burgoon, 1996; Goffman, 1956; Kleinmuntz & Szucko, 1984; Serota & Levine, 2014; Serota et al., 2010). In fact, people are sometimes deceptive, meaning that they "intentionally, knowingly, or purposefully mislead another person" (Levine, 2014, p. 37), despite the possibility of negative relational consequences for such deception (McCornack & Levine, 1990; Millar & Tesser, 1988). Although the reasons for deceiving may be altruistic (DePaulo & Kashy, 1998; Goffman, 1956), many cultures value honest communication and condemn deception (Kleinmuntz & Szucko, 1984; Levine, 2014; McCornack, Morrison, Paik, Wisner, & Zhu, 2014; Serota, & Levine, 2014).

Deception is a type of selective information control (McCornack et al., 2014). More specifically, it is the purposeful sending or withholding of some information with the intent to mislead another (Levine, 2014). There are three main ways in which deception occurs: via lying, omission, and equivocation. Deception via lying is the act of knowingly sending a message which contains false information in order to mislead another. Second, deception via omission is the act of withholding information in order to mislead another. Lastly, deception via equivocation is the act of sending a purposefully ambiguous message in order to distort some information and therefore mislead another (Buller & Burgoon, 1994). Again, it is important to note the intention to mislead another must be present when sending the dishonest message in order for deception to occur (Levine, 2014).

People encounter deception on a daily basis (Buller & Burgoon, 1996; Kleinmuntz & Szucko, 1984; Serota et al., 2010; Serota & Levine, 2014). In fact, it was found that Americans

self-report sending deceitful messages once or twice daily (Serota et al., 2010). Further, it was later found that most deceptive messages are sent by a few prolific deceivers (Serota & Levine, 2014).

The aforementioned societal condemnation is partly why deception has been the focus of multiple studies. In fact, people have been trying to distinguish between truthful messages and deceitful messages for centuries (Kleinmuntz & Szucko, 1984). Many academic disciplines as well as The Department of Justice, CIA, FBI, INTERPOL, local law enforcement agencies, the judicial system, and other entities have a stake in being able to detect deception accurately. Even verdicts of court cases have been contingent on the veracity of suspects' messages. Consequently, the majority of deception research is focused on finding a way to distinguish truths from lies in a systematic manner. Put in other words, most research on deception has been conducted in order to forge a path towards deception detection (Burgoon & Qin, 2006; Levine, 2014).

Extant deception detection literature is littered with three consistent and important findings. First, laypersons have been found to only have a rate slightly above chance at accurately detecting deception (54%) as evidenced in a large meta-analysis by Bond and DePaulo (2006). Second, people greatly over-estimate their ability to detect deception accurately (Burgoon & Levine, 2010; DePaulo, Charlton, Cooper, Lindsay, & Muhlenbruck, 1997). Numerous studies have found that those who are confident in their abilities to detect deception exhibit no better accuracy rates than those who severely doubt their deception detection ability. Lastly, people are quick to judge a message as truthful rather than deceptive regardless of the message's veracity (Levine, Kim, Park, & Hughs, 2006). These three findings generally unify any dissecting research streams within extant deception literature.

There primarily exist two different perspectives researchers have taken when examining the phenomenon of deception. This report names them the dominant perspective and the new perspective. These two perspectives will be compared and contrasted in the following section. The discussion of these two perspectives will lead to an enhanced understanding of the deception detection field of research. Therefore, this understanding will 1) lead to the generation of new research directions; 2) to a better understanding of the nature of deception; 3) an objective space in which these two perspectives can be evaluated; 4) to future directions for deception detection practitioners, and 5) to a better understanding of communication processes in general.

Section One- Comparing and Contrasting Two Perspectives of Deception Research

Although there exists a large amount of deception detection literature, many deception scholars agree that little progress has been made towards being able to detect deception accurately (Blair et al., 2010; Levine, 2014; Levine & McCornack, 2014; McCornack et al., 2014). Deception detection studies have consistently found that lay persons perform poorly at distinguishing truths from lies in the lab (Bond & DePaulo, 2006; Burgoon, 2015, Levine, 2014; McCornack et al., 2014). In fact, Bond and DePaulo (2006) conducted a large meta-analysis which found that laypersons consistently have a rate slightly above chance (54%) at successful deception detection.

This consistently low accuracy rate has caused many scholars to question the ecological validity of many deception detection studies as well as the theoretical foundations on which such studies were conducted (e.g. Blair et al., 2010; Levine, 2014; Levine, Feeley, McCornack, Hughes, & Harms, 2005; McCornack et al., 2014). However, other scholars assert that these consistent observations are suggestive that lay persons are simply poor polygraphs as a result of lacking in expert deception detection training (Burgoon, 2015; Burgoon & Qin, 2006).

Again, these two differing views of deception detection research have somewhat split the field of deception literature into two main perspectives of the process of deception named the dominant perspective and the new perspective. Traditionally, most deception research originated, and continues to be written, from authors who view the process of deception through the dominant perspective. However, within the last few decades, many new perspective scholars have been critical of the assumptions and findings of dominant perspective research. The research carried out through these two perspectives on the surface may seem similar. However,

there exists important and striking differences in the methods and implications of each research stream. Next will be a concise review of each perspective.

The Two Perspectives

Most deception scholars agree that the communication of deception occurs in a step-wise process and that in order for it to occur it must be intentional (Buller & Burgoon, 1996; Levine, 2014; McCornack et al., 2014). However, extant deception literature is currently divided into research conducted from two different perspectives of the process of deception. Consequently, research under these two perspectives seek to answer different questions, focus on different variables, and observe different findings. However, the end goal of these research streams is to generate ways by which one can detect deception. This section compares these two perspectives and briefly discusses their own independent and intersecting research streams.

The dominant perspective. The dominant perspective is largely informed by the widely-cited interpersonal deception theory (IDT hereafter; Buller & Burgoon, 1996; Burgoon, 2014; Burgoon & Buller, 2004, 2008, 2015). The dominant perspective's conceptualization of the process of deception originates from the theoretical process of deceptive discourse production as outlined by IDT. Through this perspective, deception is theorized as occurring in the following four step process. First, a communicator is presented with some situation where the truth is problematic to disclose. Second, the communicator chooses to send an intentionally misleading message. Third, the communicator mentally constructs the dishonest message. Lastly, the communicator sends the deceitful message (Buller & Burgoon, 1996; McCornack et al., 2014).

After the message is sent, the recipient checks for congruency in the communicator's verbal and nonverbal messages. When an incongruence is noticed, the message recipient then actively infers suspicion. However, the deceiver is sensitive to the recipient's inferences of

suspicion and consequently adapts messages in order to appear honest. The recipient of the deceitful messages is in communicative game of "cat and mouse" as the recipient attempts to uncover an ever-adapting sender's deception. Therefore, most deception goes uncovered and even unnoticed (Buller & Burgoon, 1996; Burgoon & Buller, 2015).

According to IDT, a person is a savvy deceiver inasmuch as one can craft and send deceitful messages without their message being judged as dishonest. However, IDT posits that a deceptive communicator grows anxious from the knowledge that they have an *a priori* intent to deceive another. This anxiety coupled with the cognitive complexity of deceiving another then causes extreme monitoring of deceivers' behavior which leads to a phenomenon known as exhibiting "truth leakage", or unintentional verbal and non-verbal indicators of deception (Blair, Levine, & S 2010; Buller & Burgoon, 1996; Burgoon et al., 2008; Ekman & Friesen, 1969; Ennis, Vrij, & Chance, 2008; Zuckerman, DePaulo, & Rosenthal, 1981).

As a result of this "truth leakage" most deception detection studies in the dominant perspective are conducted in order to uncover these cues to deception (Burgoon, 2015; Burgoon, Blair, & Strom, 2008; DePaulo, Lindsay et al., 2003). Building off of Goffman's (1959) impression management work and four factor theory (Zuckerman & Driver, 1985), IDT argues that people cannot help but exhibit "truth leakage" when sending deceptive messages. Deception scholars using the dominant perspective generally believe if these indicators of deception are found, those cues would serve as the basis for uncovering deception in interpersonal as well as interrogative contexts (Buller & Burgoon, 1996; Burgoon 2015). In short, this perspective is built on the fundamental assumption that deception can be detected under the right conditions in a sender's demeanor through unintentional behaviors. Therefore, deception studies using the dominant perspective have largely been interested in examining sender demeanor.

Nonverbal indicators of deception. Many scholars have hypothesized that through nonverbal messages people communicate much more than they often intend (Burgoon, Blair, & Strom, 2008; Mann, Vrij, Leal, Granhag, Warmelink, & Forrester, 2012; McNeil, 1992). For example, it is through nonverbal communication that "people unwittingly display their inner thoughts and ways of understanding events of the world. These gestures are the person's memories and thoughts rendered visible" (McNeil, 1985, p. 352). IDT proposes that deceivers' intentions are often rendered visible as a result of their nonverbal messages (Buller & Burgoon, 1996; Burgoon, 2015). Studies have found that both the verbal and nonverbal content of messages can be used in order to detect deception successfully (Vrij, Edwards, Roberts, & Bull; 2000). Consequently, much research within deception detection research has been in search of any possible nonverbal indicators of deception.

Most of this type of research on finding possible cues to deception is laboratory based. Many studies attempting to uncover any possible indicators of deception follow the following research design. Typically, college students are recruited to provide truthful or purposefully dishonest statements. These statements are often video-taped and coded for any patterns in their nonverbal behavior within their respective truthful or deceitful treatment groups. The occurrences of nonverbal movements are then counted in each treatment group and are compared across groups usually either by independent samples or paired samples *t*-tests (Hartwig & Bond, 2011). Numerous studies have been conducted with this design. These studies often produce contradictory and non-significant results (for a comprehensive review of these hundreds of studies see Bond & DePaulo, 2006; DePaulo et al., 2003; Hartwig & Bond, 2011).

In spite of a plethora studies attempting to uncover non-verbal truth leakage, few nonverbal indicators of deception have been suggested by previous literature. Although there

have been mixed and often contradictory results in extant literature, studies repeatedly found five non-verbal indicators of deception at statistically significant rates. Deceivers 1) use fewer gestures or body movements that aid or facilitate message sending (DePaulo et al., 2003; Cohen, Beattie, & Shovelton, 2010); 2) shift their weight more; 3) engage in more self-touching; 4) use more foot movements; and 5) use less hand gestures (DePaulo et al., 2003). Therefore, dominant perspective researchers hypothesize that these five nonverbal indicators of deception and possibly more are the keys to accurately detecting deception (Burgoon & Qin, 2006; Cohen et al., 2010; Henningsen, Valde, & Davies, 2005; Mann et al., 2012).

These indicators of deception have not improved deception detection accuracy rates despite their repeated statistically significant findings (Bond & DePaulo, 2006). For example, no significant difference existed between experiment participants who were trained in nonverbal indicators of deception and experiment participants who received bogus training or no training. In fact, participants in the legitimate training group had a lower average deception detection accuracy rate than the bogus training group (Levine et al., 2005). Although these indicators of deception are being observed, they have failed to moderate deception detection accuracy rates.

Linguistic markers of deception. Along with examining nonverbal communication for possible indicators of deception, dominant perspective scholars search for linguistic markers of deception. These scholars argue that deception is more cognitively demanding than truth telling (Vrij, Fisher, Mann, & Leal, 2008). Dominant perspective scholars argue that this increased cognitive load leads to changes in one's speech when deceiving another (Buller & Burgoon, 1996; Burgoon, 2015; Vrij et al., 2008). Therefore, much research within the dominant perspective of deception has been dedicated to uncovering any differences between deceivers' and honest persons' speech as well as any logical inconsistencies in deceivers' linguistic style.

A large body of literature within the dominant perspective of deception suggests that much can be learned from counting and categorizing the words one uses to deceive another (Newman, Pennebaker, Berry, & Richards, 2003). Many studies exist which have sought to examine if there exist any differences between honest and deceptive persons' speech. These studies are often designed in a similar way to the aforementioned nonverbal studies. These studies also yielded mixed and contradictory results (Levine, 2014; McCornack et al., 2014). However, a few significant results are found across these studies. In comparison to truth tellers, deceivers 1) use more third-person pronouns (Toma & Hancock, 2012; Van Swol, Braun, & Malhotra, 2012); 2) use more profanity (Van Swol, Braun, & Malhotra, 2012); 3) use more words in general (Toma & Hancock, 2012); and 4) use fewer utterances of the filler word "um" (Arciuli, Mallard, & Villar, 2010). However, although these four differences between honest persons' and deceptive persons' speech have been found, they also have not improved deception detection accuracy rates (Levine et al., 2014a; Park & Levine, 2015).

One's linguistic style may trigger a message receiver to be suspicious of the veracity of a message. Dominant perspective researchers assert that "truth-leakage" can be noticed when closely examining one's language choices (Newman et al., 2003). For example, Susan Smith attempted to deceive authorities by claiming that her two children were kidnapped when she had actually drowned them. Before she was a suspect in her children's murder she told authorities, "My children wanted me. They needed me. And now I can't help them," (p. 665). Newman et al. argue that Smith's statement is indicative of deception because of her peculiar language choice: normally, people will speak of missing loved ones in present tense. "The fact that Smith used the past tense in this context suggested to trained Federal Bureau of Investigation (FBI) agents that she already viewed them as dead" (Newman et al., 2003, p. 665). This close, analytical

examination of one's messages could lead to uncovering deception. However, it is very difficult and often impossible to replicate such situations where one would engage in such high-risk lies in laboratory settings (Levine, Blair, & Clare., 2014a). This kind of research is also often subject to hindsight bias as the data in these studies often come from already convicted suspects.

The dominant perspective prioritizes sender demeanor by placing it at the forefront of where deception detection is likely to occur. Most findings from this perspective have been mixed and often contradictory and also have yet to improve deception detection accuracy rates (Hauch, Sporer, Michael, & Meissner, 2016). For example, Hauch et al. (2016) conducted a meta-analysis which sought to examine whether or not training on indicators of deception have improved deception detection accuracy rates. It was found that sender demeanor training resulted in a small to medium training effect for deception detection accuracy, despite these often-contradictory findings. Further, training on linguistic styles lead to the greatest deception detection accuracy rates, while training on nonverbal heuristics led to little to no improvement. However, most deception scholars agree that the research within the dominant perspective has been beneficial and should continue to be conducted (Burgoon, 2015; Burgoon & Levine; 2010; Burgoon & Qin, 2006).

The new perspective. The new perspective views deception as occurring in an importantly different way than the dominant perspective conceptualizes. First, again, some communicator is presented with a situation in which the truth is problematic to disclose. Second the communicator begins crafting a message *while simultaneously sending* the message. Third, if while the communicator is speaking the message there is information that is possibly harmful to disclose, the communicator will deceive by changing the message *while still sending the message* in order to keep the possibly harmful information hidden (McCornack et al., 2014).

The new perspective asserts that there is no *a priori* intent to deceive, but rather the decision to deceive occurs as the individual is sending the message. It is important to note that when viewed from the dominant perspective, the decision to deceive another takes place *before* the individual has sent the message. However, within the new perspective these two steps occur simultaneously (McCornack et al., 2014). It is important to note that in this perspective people still *choose* to deceive.

Since the sending and constructing the deceitful message occur simultaneously, recipients are even less able to observe any "truth-leakage" since there exists no a priori intent to deceive another. In fact, suspicion rarely arises from recipients as a result of most communication being honest most of the time (Levine, 2014; McCornack et al., 2014; Serota & Levine, 2014). Scholars theorize that communication is fundamentally cooperative, because without a constant presumption of honesty, society could not exist (Grice, 1986). Therefore, people generally believe what is communicated to them (Gilbert, 1991). Consequently, within the new perspective, people are also bad lie detectors as a result of their tendency to believe most messages. The inference that one might be deceptive rarely occurs to them as a result of this tendency (Levine, 2014). This tendency to believe most communication is known as the truth-default state which is the assumption that drives one of IDT's counterpart theory, truth-default theory (TDT).

In the new perspective, sender demeanor is not important as it is even more elusive under this logic. Scholars examining deception through the new perspective often cite that most deception is uncovered well after a dishonest message is received (e.g. Levine, 2014; Park, Levine, McCornack, Morrison, & Ferrara, 2002). Consequently, they argue that most studies conducted in the dominant perspective have failed to be ecologically valid, because people

normally do not uncover a message as deceptive when it is received (as in the aforementioned studies), but often much later (Blair et al., 2010; Levine, 2014; McCornack et al., 2014; Park, et al., 2002; Serota & Levine, 2014). Instead, scholars researching deception within the new perspective argue that research ought to be dedicated to uncovering contextual information about the dishonest message and strategic questioning of possibly dishonest individuals (Blair et al., 2010; Levine, 2014; Levine, Clare, Green, Serota, & Park, 2014; McCornack et al., 2014).

Uncovering contextual information. While dominant perspective research relies on examination of sender demeanor, new perspective scholars such as Park et al. (2002) argue that deception detection outside the lab happens in a much different way. In order to understand how individuals uncover deception in their day to day lives, the authors told participants to journal about instances when they uncovered deception. They found that when persons learn that another deceived them, it is often a result of their reliance on information other than verbal and nonverbal behaviors. Specifically, they found that people report using third party information, the consistency of statements with prior knowledge about the message in question, the consistency of statements with physical evidence, or confessions when making judgments about the veracity of others' messages. Further, people report uncovering deception much after the deceptive message was received rather than at the time of its reception (Park et al.).

As a result of these findings and similar findings (e.g. Serota & Levine, 2014), Blair et al. (2010) argue that researchers have fallen behind practitioners in terms of deception detection. Questioning previous studies' ecological validity, they argue that real life deception detection practices do not rely on sender demeanor. The authors assert the reason deception detection accuracy rates in previous studies are near chance (see Bond & DePaulo, 2006) is the judgers' collective inability to interact with the message senders and thus failure to prompt diagnostically

useful information about the message in question. In professions where uncovering the truth is critical, practitioners interact with possibly deceitful message senders in order to gain contextual information about the messages in question. Therefore, the authors hypothesized that allowing participant judges to learn content in context about the messages in question will lead to higher accuracy rates than those who do not have content in context. After conducting ten separate and independent studies, it was found that judgers who have access to content in context exhibit significantly higher deception detection accuracy rates than those who passively judge messages' veracity (as in previous studies) (Blair et al., 2010). Thus, content in context is an important piece of the deception detection puzzle within the new perspective.

Strategic questioning. New perspective researchers not only believe that content in context should be utilized in deception detection studies, but so should interrogative question effects. "Question effects refer to the idea that how a potentially deceptive interviewee is questioned may impact veracity judgments, detection accuracy, coded verbal and nonverbal responses, or some combination of these outcomes" (Levine et al., 2014a, p. 263). Few studies within extant deception literature include the questioning of a message sender. Levine et al. (2014a) hypothesized that message judgers watching interviews which include active questioning of an individual will exhibit deception detection accuracy rates much higher than the often-reported Bond and DePaulo (2006) 54% accuracy rate. After conducting six experiment design studies, they found that participants exhibited significantly higher than average deception detection accuracy rates when they witnessed interviews which included active questioning of a message sender. As a result of this finding, the authors argue that research within the prevailing model has most likely "been looking for deception detection accuracy in the wrong places" (Levine et al, 2014a, p. 284).

Although questioning of potentially deceptive individuals leads to higher rates of deception detection accuracy, scholars from the dominant perspective criticize the time-consuming nature of such practices. They argue that strategic questioning and gathering contextual information consumes too much time for real world deception detection practices, particularly in high stakes situations (Burgoon, 2015; Burgoon & Qin, 2006; Burgoon, Blair, & Strom, 2008). However, new perspective scholars such as Park and Levine (2015) contend that the new perspective's practices are worth researching as they are the most ecologically valid as it mirrors real world interrogation settings as well as daily interactions.

Summary. Despite both examining deception, the two perspectives' research streams vary greatly (Burgoon & Levine, 2010; Levine, 2014). The noticing and challenging of differences in these two perspectives is creating new and exciting research. Next, this report will briefly discuss some important theoretical differences between perspectives which are responsible for the different approaches to deception detection research.

Important Differences Between Perspectives

Each of these two perspectives bring different parts of the process of deception into focus. As each brings different pieces of deception into focus, other pieces of the deception puzzle are consequentially blurred. The lenses through which scholars view deception greatly affect how the research is conducted and therefore the results and implications of the research, as well. Therefore, it is important to discuss some of the most striking differences between these two research streams as a result of their differing conceptualizations of the deception process. Next, this report will outline four areas where the two perspectives' research streams begin to most greatly diverge.

How Messages Are Produced. As previously mentioned, these two perspectives most notably differ by how they conceptualize the process of deception. Each perspective is founded on a different model of discourse production. These different models are the origin of differences

between the dominant and new perspectives. Next, this report will briefly explain these two different models of message production in order to then frame the following three major differences between the two perspectives.

The dominant perspective's model of deceptive discourse production. The dominant and new perspectives' models of discourse production vary so greatly because of their different theoretical foundations. The dominant perspective is largely informed by communication theories like Buller and Burgoon's interpersonal deception theory (1996), Ekman and Friesen's leakage theory (1969), and Zuckerman and Driver's four factor theory (1985). These theories inform the vast majority of extant deception research. Further, they are the theories which compose the dominant perspective's tacit model of deceptive discourse production.

This model conceptualizes the process of deception as happening in the following way. As previously stated, some communicator is presented with some complex situation. The complexity of this situation is derived from the multiple, often competing goals and consequential outcomes as a result of some information possessed by the communicator which, if disclosed, would lead to negative consequences (Buller & Burgoon, 1996; McCornack et al., 2014). In the instance of *deceptive* discourse production, the communicator chooses to send a deceitful message. It is important to note that the choice to send a deceitful message is made before the deceitful message is actually constructed. Next, the communicator must create the deceptive message "from scratch", relying only on extant, available cognitive heuristics of message production. Lastly, the communicator sends the deceptive message (Buller & Burgoon, 1996; Burgoon, Blair, & Strom, 2008; Levine, 2014; McCornack et al., 2014).

The new perspective's model of deceptive discourse production. The new perspective's model of deceptive discourse production is primarily informed by human cognition and speech

production theory from Baars and Franklin's global workspace theory (2007); speech production research from Chang (2002); Dell, Change, and Griffin (1999); Hovy (1990); Levelt, Roelofs, and Meyer (1999); and O'Keefe and Lambert (1995); as well as Zipf's principle of least effort (1949). These theories construct the foundation on which the new perspective's model is built (among others; for a thorough discussion of this literature see McCornack et al., 2014).

The new perspective's model of deceptive discourse production occurs in the following way. Some communicator is presented with a complex situation. As previously stated, the complexity of the situation is a result of some information that, if disclosed, would lead to potential negative consequences, despite any possible competing motivations to do so (Buller & Burgoon, 1996; McCornack et al., 2014). The communicator seeks to overcome the situational complexity in the most efficient way (McCornack, 1997; McCornack et al., 2014; Zipf, 1949). If the communicator judges that the most efficient way to overcome the situational complexity is to send a deceptive message, the communicator will begin crafting the deceitful message *while simultaneously sending it* (Hovy, 1990; McCornack; 2014). In order to do so, humans will construct deceptive messages from the first available units of information (see Zipf, 1949). The communicator begins to construct information stored in "neural neighborhoods associated with the activated, relevant, truthful information; or information that already has been uploaded into working memory" (McCornack et al., 2014, p. 354). Generally, one begins to speak before one has planned out a full utterance (Hovy, 1990). Therefore, in this model, there is no *a priori* intent to deceive, but rather the information of the messages is manipulated *as* it is being sent (McCornack et al., 2014). In other words, "intent to deceive may occur before or during the production of discourse that is functionally deceptive—but most certainly need not precede discourse production" (p. 356).

Summary. The two perspective's models of deceptive discourse production both attempt to explain how deceptive messages are produced. The dominant perspective's model of deceptive discourse production is a top-down, linear process where the intent to deceive another happens *before* the message is constructed and sent. The new perspective's model is opportunistic in that the communicator seeks to overcome situational complexity by however is judged as the most efficient means to do so. Their differences lead to profoundly different theories, research designs, findings, and implications. Their differences also lead to three more major differences about each perspective's approach to studying deception detection between the two perspectives.

Where deception is detected. One of the most overt differences between the two perspectives is where deception detection takes place. In the dominant perspective, a deceptive message is mentally constructed before it is sent (Buller & Burgoon, 1996). However, in the new perspective, the deceptive message is constructed as it is being sent (McCornack et al., 2014). Consequently, the detectible parts of the deception process differ between both perspectives. According to dominant perspective researchers, deception is a cognitively complex task (e.g. Buller & Burgoon, 1996). Because of its high cognitive demands, coupled with the anxiety of being "caught" attempting to deceive another, dominant perspective scholars believe that deception can be detected via the sender's demeanor (Burgoon, Blair, & Strom, 2008; Burgoon & Levine, 2009; DePaulo et al., 2003). Therefore, researchers using the dominant perspective believe that receivers inform their veracity judgments mostly on sender demeanor via the sender's nonverbal and verbal communications. In other words, deception detection takes place

by the message recipient responding to possible cues to deception in the sender's demeanor and messages.

New perspective scholars believe that sender demeanor is not necessarily important when making veracity judgments of another's messages (McCornack et al., 2014; Park & Levine, 2015). New perspective scholars generally believe that message senders do not change their demeanor in a detectible way as a result of message generation and message transmission occurring simultaneously (Levine et al., 2014a; McCornack et al., 2014). Also, as a result of people's tendency to believe what they are told (Gilbert, 1991; Levine, 2014; Park et al., 2002), coupled with their over confidence in their ability to detect deception (Aamodt & Custer, 2006; Burgoon & Levine, 2009; Johnson, 2006), message recipients seldom make accurate veracity judgments during their daily interactions when deception occurs (Serota et al., 2010). Plus, new perspective scholars argue that most deception occurs long after a deceptive message is received and rarely during the interaction when the deceptive message was sent (Levine, 2014, McCornack et al., 2014; Park et al., 2002; Serota et al., 2010). While the dominant perspective focuses on the demeanor of the sender for the location where deception detection takes place, the new perspective focuses on prompting diagnostically useful information. They argue that content in context and strategic questioning lead to higher accuracy rates. Therefore, content in context and interrogative contexts are the places where deception can actually be noticed during interactions (Levine et al., 2014a; 2014b; Vrij & Granhag, 2012).

When Deception Detection Occurs. Each perspective differs on how it enables researchers to view when deception detection (ideally) takes place outside the lab. Dominant perspective scholars argue that deception detection occurs, and more importantly *should* occur, at the time of the message reception. Again, this perspective is built from the model of deceptive

discourse production which theorizes that "truth-leakage" is where deception can be detected. Therefore, deception detection, according to dominant perspective scholars, does (and should) occur *during* the message reception by observing message senders' demeanors.

While dominant perspective research theorizes that deception detection occurs during the message reception, new perspective scholars assert that deception detection happens at a much different time. For example, new perspective scholars argue that deception is often uncovered long after message reception (Levine, 2014; Serota et al., 2010). As also previously mentioned, new scholars believe deception detection should happen by prompting diagnostically useful information through strategic questioning of the message sender (Granhag, Strömwall, Willen, & Hartwig, 2012; Levine, Clare, Blair, McCornack, Morrison, & Park, 2014; a). In fact, as a result of the simultaneous occurrence of message generation and message transmission, new perspective scholars posit that researchers should focus their efforts on interrogation techniques such as strategic use of evidence (SUE) in order to distinguish truths from falsehoods accurately (Granhag, Strömwall, & Hartwig, 2007; Granhag et al., 2012; Levine, Clare, Green, Serota, & Park, 2014). However, dominant perspective scholars argue that deception detection in this way is not practical. They argue that real world contexts where accurate deception detection is most important can rarely spare the time needed to employ information gathering interrogation techniques. However, new perspective scholars assert that this kind of strategic questioning has the potential to be expedient and accurate; it just needs to be studied further. Put differently, in the new perspective, deception detection (ideally) occurs *after* the message is received. In the dominant perspective, the detection (ideally) occurs *during* message reception (Burgoon, 2012; Levine, 2014; McCornack et al., 2014).

How Detection Occurs. Not only do new perspective and dominant scholars take differing stances on when deception detection occurs, but also *how* it occurs. Dominant perspective research has heavily employed methodologies where participants judge message veracity by passively observing the senders' communicative behaviors (Burgoon & Levine, 2010; Levine et al., 2014b). However, new perspective scholars assert that day-to-day deception detection does not occur in the lab as a result of extant research failing to adequately mimic daily interactions where deception occurs (Levine et al., 2014a; 2014c). Further, new perspective scholars argue that meta-analytic deception detection accuracy rates are near chance (Bond & DePaulo, 2006), because previous studies used methodologies which require message receivers to *passively* judge message veracity rather than *actively* (Levine et al., 2014b).

Again, in the dominant perspective, deception detection research is aimed primarily at finding and observing unintentional communicative cues to deceit (Burgoon, 2015). Dominant perspective scholars believe this is how successful deception detection takes place. They assert that deception detection should be based on passive observation of the message sender rather than based on active interaction (such as interviews, interrogations, etc.) For example, in law enforcement contexts where the consequences of inaccurate deception detection are severe and time is limited, it would be most efficacious to quickly make a message veracity judgment with passive observation. In fact, research participants generally claim that they make and change their veracity judgments based on sender demeanor (Aamodt & Custer, 2006; Johnson, 2006). However, experts within law enforcement agencies should not rely on passive judgments since passive observations of potentially deceptive individuals elicit accuracy rates of near-chance (DePaulo et al., 2003; Bond & DePaulo, 2006; Bond & DePaulo, 2008; Levine et al., 2014a; Porter & ten Brinke, 2010; Vrij & Granhag, 2012; Vrij, Granhag, & Porter, 2010).

While passive judgment of message veracity leads to low deception detection accuracy rates, new perspective scholars are finding that active engagement with message senders leads to significantly higher accuracy rates. For example, when both lay persons and experts have the ability to interact with message senders and have knowledge of the situational context, they can exhibit near-perfect accuracy rates (Levine et al., 2014a). Levine et al. contend that these high accuracy rates, "require that the right questions are asked the right way in a situation where message content is useful and where the solicitation of honesty [a confession] is a viable strategy" (p. 459). Again, dominant perspective scholars argue that this kind of active interrogation methodology is simply not realistic to practitioners (Burgoon, Blair, & Strom, 2008; Burgoon., 2015; Mann, Vrij, & Bull, 2002). Now, that does not mean that dominant scholars completely deny active interrogation techniques (Burgoon & Levine, 2010). Instead, they generally believe that demeanor-based judgments are more efficacious. In other words, the dominant perspective is built on the assumption that truth-leakage can be observed, while the new perspective is built on the assumption that this truth-leakage is not all that helpful to deception detection.

Conclusion. The two aforementioned models of deception vary greatly and thus researchers from their respective schools of thought approach deception research in vastly different ways. Again, most deception research to date has been conducted from the dominant perspective (Burgoon & Levine, 2010; Levine & McCornack 2014; McCornack et al., 2014). Extant prevailing model deception literature has consequently observed vastly different results than that of the new model simply because of their differing conceptualizations of the process of deception (Burgoon, 2015; Levine & McCornack, 2014; McCornack et al., 2014; Park & Levine, 2015). Scholars who conduct research under either model often question the conceptualizations,

the data, the methods, the results, and the conclusions of research generated from studies from those within the other field (eg. Burgoon, 2015; Park & Levine, 2015; etc.). The next section of this report will include a concise overview of the most notable implications of these two research streams as well as some important applications of the findings from each perspective. The remainder of this report will discuss some limitations of these studies in each perspective as well as discuss possible areas of future research for each perspective, and deception in general.

Section Two – Implications and Applications of Deception Research

The research generated from each perspective is primarily concerned with uncovering ways to detect deception accurately. The findings from both the dominant perspective and the new perspective have important implications for theories of deception, deception research, applications of deception detection findings, and the understanding of human communication. Therefore, this section will do the following two things. First, this section will discuss some important implications of each perspective and their respective research streams. Second, this section will discuss some applications of each perspective's independent research streams.

Dominant Perspective Implications

The vast majority of extant deception detection research is written from the dominant perspective. The dominant perspective is largely informed by interpersonal deception theory (Buller & Burgoon, 1996), truth-leakage theory (Ekman & Friesen, 1969), and four-factor theory (Zuckerman & Driver, 1985). As a result of these theories, the dominant perspective conceptualizes the phenomenon of deception as happening in a linear, step-wise process (McCornack et al., 2014). Because of this theoretical framing, the dominant perspective primarily focuses on sender demeanor and ways to exploit the changes in that demeanor. Therefore, the implications of the dominant perspective are different than those of the new perspective.

Constructing before sending. As previously stated, the dominant perspective differs from the new perspective in multiple ways. Perhaps the most important departure from the perspectives' diverging research streams is the theoretical differences in deceptive message generation (Burgoon & Levine, 2010; Levine, 2014; McCornack et al., 2014). In the dominant

perspective, the deceiver mentally constructs the deceptive message *and then* sends it. Because these steps are two different steps in the process of deception they imply three important things.

First, if it is the case that these are indeed two different steps, it is likely the case that time plays an important role in the process of deception. Since deceiving another is a cognitively complex task (Buller & Burgoon, 1996; Leins, Fisher, & Vrij, 2012; Levine et al., 2014a; Vrij & Granhag, 2012), creating deceitful messages, especially believable ones, most likely takes some mental planning (Littlepage & Pineault, 1985). The amount of time engaged in this mental construction of the deceitful message would then mediate or moderate the strength, or believability, of the deceitful message (Walczyk, Grifith, Yates, Visconte, & Simoneaux, 2013). For example, it could be the case that the more time one has to prepare a lie before sending it, the more effective that lie will be.

Second, if the deceiver constructs the deceitful message and then sends it, that communicator most likely considers many factors at once while mentally constructing the message (Buller & Burgoon, 1994; Buller & Burgoon, 1996; Burgoon & Qin, 2006; McCornack et al., 2014). This implies that relational closeness of the message receiver, the attending facts of the situation, the severity and risk of the deceitful message, and many other factors all would affect the message and its believability (Burgoon & Levine, 2010; DePaulo & Kashy, 1998). For example, it was found that individuals fear being caught telling a lie to a close friend more so than to a stranger (McCornack & Levine, 1990). Therefore, it must be the case that a plethora of other factors are quickly considered by the communicator. These other factors surely affect and alter the process of deception.

Lastly, the independence of these two steps affects the receiver as well. In the dominant perspective, the message receiver grows suspicious as a result of noticing incongruences in the

sender's verbal and nonverbal communication (Buller & Burgoon, 1996; Burgoon, 2015). Perhaps the receiver might also be sensitive to the longer-than-normal time it likely takes for the communicator to mentally construct the message. Therefore, this could be a good path to possibly finding systematic ways to distinguish truths from falsehoods.

Deception as abnormal communication. Another important implication from the dominant perspective is that deception is abnormal. In the dominant perspective, the receiver checks for congruencies in the verbal and nonverbal communication of the sender in order to ascertain what is normal communication and what is not (Buller & Burgoon, 1996). If this is the case, it implies that there exists some normal way for one to communicate since deviations from this norm elicit suspicion. This implies that deception is not considered normal communication, or at least it is not treated as such. Again, despite decades of deception detection research, little has been found to improve low accuracy rates (Bond & DePaulo, 2006; Bond & DePaulo, 2008; Levine, 2014; Vrij, Granhag, & Porter, 2010). Since deception plays a relatively common part in one's daily lives (DePaulo et al., 1996; Serota & Levine, 2014; Serota et al., 2010), perhaps more can be learned by treating deception as normal communication rather than some kind of deviation from normal communication.

Deceivers detecting recipients' suspicion. One important tenet of IDT is that deceivers are sensitive to message recipients' suspicion. Once the suspicion is noticed by the message sender, the sender will alter following communications in order to appear believable. Thus, it becomes increasingly difficult for message recipients to detect deception. The message senders and message recipients are both caught in a game of cat and mouse: each having to conceal their genuine intentions (Buller & Burgoon, 1996; Burgoon, 2012). One strange implication of this cat and mouse game is that it might be the case that in order to detect deception one may also have

to engage in deception. Once a message recipient has grown suspicious, that individual, under the logic of the dominant perspective, has to mislead the deceiver by concealing the suspicion in order to continue to uncover the suspected deception. Otherwise, the deceivers change their verbal and nonverbal communication in order to conceal the truth (Buller & Burgoon, 1996; Burgoon, 2012). Thus, deception might need to be uncovered, strangely enough, by more deception under the prevailing model.

Deception provokes anxiety. According to interpersonal deception theory and truth leakage theory, communicators grow anxious when they attempt to deceive another (Buller & Burgoon, 1996; Ekman & Friesen, 1969). This anxiety is indicative of two important theoretical implications. First, communicators most likely very well understand the potential for negative relational consequences should their deceptive messages be uncovered. This likely leads to a stronger communicative defense against suspicion from the message receiver, thus making the deception more difficult to detect. Second, these communicators likely believe that attempting to deceive another is morally wrong, yet they choose to engage in their deception anyway. Perhaps then this implies that the things about which people lie are perceived to be more important than being consistent their moral values.

Again, in the dominant perspective, this anxiety causes deceivers to accidentally, and often times unknowingly, exhibit "truth leakage", or indicators of deception (Buller & Burgoon, 1996; Ekman & Friesen, 1969). These indicators of deception unintentionally communicate to message recipients, both verbally and nonverbally, that the messages from the sender are dishonest (McNeill, 1985; Snyder, 1974). However, since these indicators are not intentionally sent by the deceivers, it implies that when one engages in deception that individual might undergo some loss of communicative control. These deceivers attempt to act normal and honest

yet they are theoretically not able to do so (Burgoon & Buller, 1994; Buller & Burgoon, 1996; Vrij et al., 2008).

People are poor polygraphs. People perform notoriously poorly at distinguishing honest messages from false messages (Burgoon & Levine, 2010; Bond & DePaulo, 2006; Levine et al., 2015; McCornack et al., 2014). Even when experiment participants are taught research-suggested indicators of deception, the average of accuracy rates remains close to chance (54%) (Levine et al., 2005). These low accuracy rates have three important implications for deception research under the dominant perspective.

First, these low accuracy rates might be indicative of poor experimental design. Ecologically valid deception experimental designs are nearly impossible to design (Levine et al., 2014c; Park & Levine, 2015). In contexts where accurate deception detection is paramount, suspects are often involved in high-stakes situations where the consequences of uncovered deception could be as severe as a prison sentence (Kassin, Meissner, & Norwick, 2005). Creating this kind of perceived consequence to a research participant is a difficult and unethical task (Frank & Feeley, 2001; Vrij, Granhag, & Porter, 2010). In order to study these indicators of deception, better research designs should be created which include higher-stakes situations such as utilizing real criminal suspects as participants (Mann et al., 2002). Further, these near-chance accuracy rates mostly come from studies in which the participants knew that there would be some deception (Bond & DePaulo, 2006). Bond et al. (1992) found that participants who know they are in deception studies will assume they are being deceived, while those who are not told they are in a deception study will rarely infer suspicion. For example, in the famous Milgram studies (1969), not a single participant suspected that the voice over the intercom could be an

actor. It could be the case that the ways by which researchers are prompting suspicion are unlike real life suspicion triggers.

Second, people's low deception detection accuracy rates could be further proof of truth-bias and the truth-default state (Levine et al., 2014c). Truth-bias is the tendency for a person to judge a message as truthful rather than deceptive (Park & Levine, 1990). The truth default state is "a passive presumption of honesty due to a failure to actively consider the possibility of deceit at all or as a fall back cognitive state after a failure to obtain sufficient affirmative evidence for deception" (Levine et al, 2014c, p. 360). Further, participants in deception studies almost never assume a message to be honest, or even are suspicious of a message without being explicitly prompted to question the veracity of the message (Bond et al., 1992). Therefore, these low, near-chance, accuracy rates observed across studies are most likely indicative of the truth-default state and truth bias.

Lastly, these low accuracy rates could imply that people do not rely on the research-suggested indicators of deception in order to uncover deception. Therefore, attempting to use them in the lab to uncover deception is likely misleading. Again, people reporting uncovering deception in their daily lives long after a deceptive message is received by utilizing third party information, the consistency of statements with prior knowledge about the message in question, the consistency of statements with physical evidence, or confessions when making judgments about the veracity of others' messages (Park et al., 2002; Serota et al., 2010). Therefore, they likely are not using sender demeanor to inform their judgment since the interaction in question was in the past.

Cognitive complexity of deception. Despite having yet to exhibit any diagnostic utility in detecting deception (Bond & DePaulo, 2006; Park & Levine, 2015; Levine, Ali, Dean,

Abdulla, & Garcia-Ruano, 2016), these research suggested indicators of deception imply that there exists communicative differences between persons sending truthful messages versus deceptive messages (Burgoon, 2015; Burgoon & Levine, 2010). These observed differences also imply that deception is a more cognitively complex task than sending honest messages. According to IDT, deceivers not only have to mentally create a false message, but they must create the false context of the message and attend to any other surrounding data about the message in order to maintain it (Buller & Burgoon, 1996). The observations of this truth-leakage further imply that these deceivers either over monitor their behavior, or monitor it less as a result of deception's cognitively taxing nature (Burgoon, Blair, & Strom, 2006; Burgoon & Qin, 2006; Vrij et al., 2008). This implies there exists some threshold of cognitive complexity where, once passed, the communicator acquiesces and purposefully exposes their message as deceptive. Put differently, suppose a communicator is telling a lie that is rather complex. As more variables are entered into the lie it would become more complex and therefore more difficult to maintain. There likely exist some point where the lie becomes too cognitively difficult to maintain and that communicator would then "come clean" (Vrij et al., 2008).

New Perspective Implications

Since the new perspective greatly diverges from the dominant perspective, so do its implications. The new perspective is informed by Baars and Franklin's (2007) global workspace theory; speech production research from Chang (2002); truth default theory from Levine (2014); information manipulation theory 2 from McCornack et al. (2014) and the Park-Levine probability model (2002). As a result of its theoretical framing, the new perspective primarily focuses on content in context and uncovering ways to elicit confessions from the sender, rather

than sender demeanor. Therefore, the implications of the new perspective are different than those of the new perspective.

Constructing while sending. McCornack et al. (2014) argue that constructing a deceitful message while sending it is a crucial shift in how one researches deception. The authors posit that "people simply do not create messages in their heads and then spit them out as behavior; nor is consciousness steady-stream. Instead, consciousness consists of millions of tiny cognitive cycles of activity, and discourse is incrementally constructed accordingly" (p. 363). This implies that time is not as important of a variable as it would be in the prevailing model. This also implies that deceivers could be even savvier than scholars within the prevailing model originally believed. If deceitful messages are created while they are being sent, then it must be the case that the communicators who send these messages can think quickly. Also, since these steps occur simultaneously, it could be the case that deceivers are less nervous than previously thought since their deceitful messages are spontaneously generated and not constructed for some amount of time. In other words, the lack of "planning time" would most likely elicit less anxiety since the sender does not have time to reflect on the decision to deceive another before doing so. In the dominant perspective there exists some *a priori* intent to deceive the other. In the new perspective the "projected cognitive load of potential problem solutions should determine whether one pursues a [message] that ends up being truthful or deceptive" (p. 365).

Fallacious truth-lie dichotomy. This kind of message generation allows for the communicator to have more available ways to manipulate the information in the discourse while still being covert. As parts of a truthful message are being sent, one can alter the information in the remainder of the message in order to appear more believable and congruent with the previous truthful statements (McCornack et al., 2014). Therefore, the messages resulting from this kind of

message production are not bold-faced lies or bold-faced truths (see McCornack, 1997), but a deceptive message which is embedded within and around truthful messages. This implies that deceivers will change their messages from truthful to deceitful and back again many times during their discourse; doing so in a way to maximize efficiency and overcome whatever situational complexity lead them to choose to deceive another (Levine, 2014; McCornack, 1992; McCornack et al., 2014). Research within the dominant perspective has been heavily criticized for conceptualizing deception as a false dichotomy of either bold-faced truths or bold-faced lies (Park & Levine, 2015; McCornack et al., 2014). Conceptualizing deception in this way most likely makes detecting all deception more difficult which therefore leads to the aforementioned near-chance accuracy rates. Conceptualizing deception in this new way would continue to open up new areas of research and discovery.

Contextual information is key. The new perspective stresses that attention ought to be given to content in context, rather than sender demeanor, when attempting to research deception detection methods (Blair et al., 2010; Levine, 2015). As previously stated, meta-analytic data find that people in extant deception studies exhibit near-chance deception detection accuracy rates (Bond & DePaulo, 2006). Again, the studies in such meta analyses are criticized for not being ecologically valid since participants often passively judge another's message veracity, devoid of meaningful contextual information. However, once participants are given the ability to access contextual information about the message in question, deception detection accuracy rates begin to significantly rise towards 80% (Blair et al., 2010: Levine et al., 2014a; Park et al., 2002; Vrij & Granhag, 2012). This could imply that people might be better at detecting deception than

previously thought. In one's daily life, that individual has the ability to actively judge others' messages. Thus, people may be rather remarkable deception detectors (Park et al.).

Active participation versus passive judging. When deception research participants have the ability to interact with potentially deceitful persons they are significantly more likely to judge the veracity of their messages accurately (Blair et al., 2010; Levine et al., 2014a; 2014b; Park et al., 2002; Vrij & Granhag, 2012). This implies that people are more successful at deceiving another when there is little communication following the deceitful message. However, when one sends a deceitful message which is questioned and diagnostic information is consequently prompted, the intended deception is likely not as successful. This could also imply that the more time one has to interact with a potentially dishonest person, the more accurate that person will be at detecting deception.

Strategic questioning. Since active judging of a potentially deceitful person increases accuracy rates, research within the new perspective is often dedicated to uncovering what questions elicit the best responses from potentially deceitful individuals (Levine et al, 2014a). In other words, these studies have been researching question effects. The improved accuracy rates exhibited in Levin et al. (2014a) question effects studies imply that deceivers are perhaps not prepared to answer questions. In fact, researchers have found that by asking unexpected or irrelevant questions, deceivers become prone to accidentally reveal their deceptive intentions (Granhag, Vrij, & Porter, 2010; Lui et al., 2010). This further implies that deception is indeed a cognitively complex task; particularly when maintaining a deceptive message during an interrogation-like setting (Leins et al., 2012).

Implications Summary

The nature of research is cyclical Therefore, the implications from both perspectives still point towards uncovering a systematic way to detect deception accurately as well as new ways to understand and investigate deception. Since research findings lead to an immeasurable amount of implications and interpretations (Frey, Botan, & Kreps, 2000), the implications expand well beyond this report's discussion. Next will be a succinct list of some important applications of contemporary deception detection findings from both perspectives followed by a discussion of some limitations of deception research as well as some future research directions.

Applications of Dominant Perspective Research

Displayed in Hollywood productions and self-help books across the world, the effects of dominant perspective research are conspicuous. These effects most impacted society through their applications in legal and computer-mediated communicative contexts. Therefore, this report will quickly review some of the most notable of these applications.

Law enforcement. Applications of dominant perspective research impact legal contexts in many consequential ways. These diverse impacts are plentiful and lead to many legal ramifications such as the close textual analysis of criminal suspects' language choice as a deception detection strategy (Newman et al., 2003) to the wrongful conviction of innocent suspects (Blair, Judd, & Chapleau, 2004; Porter & ten Brinke, 2009). Most notably, applications of dominant perspective research effect law enforcement through the implementation of the widely employed Behavior Analysis Interview (BAI, hereafter), and the taxation of suspects' cognition during interrogations (Inbau, 2013).

The BAI is taught to thousands of police officers every year as part of the influential Reid Technique of interrogation (Hartwig, Granhag, & Luke; 2014; Inbau, 2013; Inbau, Reid,

Buckley, & Jayne, 2011). "The BAI is a system of questioning that includes a number of so-called behavior-provoking questions, which are thought to result in different verbal and non-verbal responses from interviewees" (Hatwig, Granhag, & Luke, 2014; p. 8). From these different verbal and nonverbal responses, interrogators can then theoretically distinguish from suspects' truthful and deceptive responses. However, despite the BAI's widespread use in multiple national and international law enforcement communities, it relies on findings from dominant perspective research which are mixed and contradictory (Porter & ten Brinke, 2010; Vrij et al, 2006). Again, the cues believed to be correlated with deception are only faintly correlated (DePaulo et al., 2003; McCornack & Levine, 2014), and have no diagnostic utility in interrogative contexts (Hartwig et al., 2006; Levine et al., 2005; Levine et al., 2014b). Further, Vrij et al. (2006) empirically tested the BAI and found that the behavior-provoking questions did not produce noticeable differences between honest and deceitful persons. Despite these short-comings, the BAI is the most common way law enforcement personnel are trained to detect deception (Inbau, 2013).

CMC. The other most notable area to be effected by dominant perspective research and assumptions is CMC. Applications of such research led to the generation of two types of computer-mediated deception detection methods as well as an enhanced understanding of human communication in general. Therefore, this report will briefly list these remarkable applications of dominant perspective research.

CMC is increasingly becoming more of a part of daily life (Burgoon, Stoner, Bonito, & Dunbar, 2003; Zhou, 2005). Therefore, it is unsurprising that deception is as present in CMC as it is in face-to-face communication (George & Robb, 2008). In fact, people are more likely to be deceptive in CMC than in any other medium of communication (Van Swol, Braun, & Kolb;

2015). CMC is particularly vulnerable to deception because of less available communicative cues and its asynchronous nature (Ludwig, Van Laer, De Ruyter, & Friedman, 2016). Deception within CMC has potential to be particularly harmful to individuals, companies, and society at-large in numerous ways. Researchers from multiple disciplines have investigated numerous methods in order to attempt to distinguish between honest and deceitful messages in CMC. Some of the most impactful methods will now be discussed.

One way that dominant perspective research is being applied in CMC contexts is by utilizing natural language processing tools (NLP's) to detect deception. NLPs are algorithmic computer programs which perform sophisticated analyses of texts in order to better understand the text and its language use (McNamara & Graesser, 2012). One of the most tried and trusted NLPs is Linguistic Inquiry and Word Count (LIWC, Pennebaker, Francis, & Booth, 2001). LIWC evaluates over 70 dimensions of language and has a trusted reputation "for tracking linguistic features that are indicative of social and psychological phenomena" (Duran, Hall, McCarthy, & McNamara, 2010, p. 440). For example, LIWC has been used to uncover personality traits (Pennebaker & King, 1999), emotional expression (Kahn, Tobin, Massey, & Anderson, 2007), and communicators' mental health (Pennebaker, Mayne, & Francis, 1997).

Deception detection scholars used LIWC in order to search for differences between truthful and deceitful CMC (Ludwig et al., 2016). For example, following theoretical logic from the dominant perspective, Newman et al. (2003) used LIWC to observe if any differences existed between honest and deceitful persons' communication in asynchronous CMC. The linguistic categories which exhibited significantly different frequencies between the truthful and deceitful messages were used by participants in order to classify 61% of the messages in the study as truthful or deceptive accurately (Newman et al. 2003). Using Newman and his colleagues'

results to inform their hypotheses, Hancock, Curry, Goorha, and Woodworth (2008) examined the linguistic and stylistic differences between instant messaging (IM) conversational dyads. After also using LIWC, they found that in computer-mediated IM, deceivers and truth-tellers communicate differently. Deceivers used more words than truth-tellers; less first-person pronouns, but more third-person pronouns. Interestingly enough, these findings were consistent with previous research in asynchronous CMC (e.g. Newman et al., 2003). Hancock et al. also found that despite being blind to the possibility of deception occurring, conversational partners would ask more questions of fellow participants when their conversational partner was lying. Lastly, consistent with IDT logic that deceivers will engage in what they believe to be strategic communication processes in order to maintain the appearance of honesty (Buller & Burgoon, 1996), participant deceivers matched the conversational style of truth-tellers and, most importantly, would be most similar to truth-tellers when attempting to deceive their partners. Therefore, it is unsurprising that corporate managers are more effective at recognizing deception when trainged on such deception detection methods (George et al., 2008).

While LIWC is an instrumental application of dominant perspective research in CMC, another instrumental NLP is Coh-Metix (Graesser, McNamara, Louwerse, & Cai, 2004). Coh-Metrix is one of the most thorough NLPs and the largest of its kind with over 700 indices of CMC language (Graesser et al.). These indices have all been validated across numerous domains and disciplines (Duran et al., 2010; Hempelmann, Rus, Graesser, & McNamara, 2006; Ludwig et al., 2016; McCarthy et al., 2008). Coh-Metrix uniquely "tracks linguistic features based on cognitive and social factors that are hypothesized to influence deception" (Duran et al., 2010).

Using Coh-Metrix to analyze Hancock et al.'s (2008) IM transcripts, Duran et al. (2010) observed similar differences between truthful and deceitful communications. First, the authors

similarly found that deceivers use more words in general, but less words per conversational utterance, more meaningful words; more syntactically complex conversational utterances; and "less unique information introduced during the course of the conversation" (p. 453). The authors also found that deceivers engage in more redundant communication. Specifically, the deceivers often repeated content from previous utterances. Lastly, the authors found that deceivers exhibited less specific language choice than truth-tellers which, in-turn elicited more questions from the deceivers' IM conversational partners when they were unknowingly receiving deceptive messages. As a result of these findings, the authors created six dimensions of linguistic cues to deception within Coh-Metrix's indices. These NLP analytic tools have been very useful in examining deceptive style of corporate employee CMC (Burgoon et al., 2016; Ludwig et al., 2016; Minhas & Hussain, 2016).

While NLPs like Coh-Metrix and LIWC have been helpful in the uncovering of differences between deceptive and honest CMC, some deception scholars advocate multilevel frameworks for designing CMC deception detection systems. For example, guided by speech act theory, Ludwig et al. (2016) used a multileveled framework (locutionary, illocutionary, and perlocutionary) to analyze potentially deceitful CMC texts with LIWC. The authors found that doing such analyses across the three speech act theory dimensions increased the overall lay person CMC deception detection accuracy rates to over 70% (p. 537). Therefore this method of deception detection as well as the utilization of NLPs to detect deception are important applications of the dominant perspective. Additionally, dominant perspective applications have enhanced the investigation and understanding of human communication in general.

Another fascinating application of the dominant perspective in CMC contexts is the broadening of deception research resulting from the examination of deception in CMC. For

example, Hancock et al. (2009) argue that CMC provided the space necessary for specific types of deceptive messages such as butler lies to proliferate. Butler lies are deceptive messages which are "used to manage the entry and exit of social interactions" (p. 520). Butler lies were employed by conversational IM partners "to create a virtual barrier between users and unwanted conversations" (p. 521). Such findings are used to design IM systems which improve the "always on" characteristics which cause their users anxiety. CMC is altering the ways deception is being utilized in daily life (Hancock et al, 2009). Such examinations of deception in CMC lead to a greater understanding of the ever-changing nature of human communication due to the increasing commonality of new communicative technologies.

Further, dominant perspective investigations of deception in CMC contexts are expanding the understanding of how CMC can be used to uncover differences between deceptive and truthful messages. Ho and Hancock (2018) argue that by using the stigmergic signals, deception within synchronous IM conversations can be modeled. The authors found, "in the context of text-based synchronous CMC, it is the overall combination of language action cues, rather than specific words used by deceivers to deceive, as most indicative of deception" (p. 1678-1679). Further the authors assert such investigation's efficacy in informing text-based synchronous CMC polygraph systems.

Summary. Dominant perspective research applications impact society in fascinating ways. The most notable areas of their impact the legal and digital contexts which are a part of daily communication. Dominant perspective research applications have created new computer-mediated deception detection methods (Ludwig et al., 2016; Toma & Hancock, 2012), ways to exploit the cognitive complexity of deception (Liu et al., 2012), an enhancement of deception understanding (Burgoon, 2015), and the training which most law enforcement personnel all over

the world receive. New perspective research applications impact society in fascinating, albeit different ways as well. Therefore, this report will also list such notable applications.

Applications of New Perspective Research

New perspective research applications also are employed in law enforcement contexts as well. Strategic use of evidence (SUE, hereafter), content in context, and strategic questioning have all been employed by police interrogators in order to detect deception. Therefore, this report discuss these three applications of new perspective research.

The practice of increasing the cognitive load of potentially deceptive individuals and other dominant research findings enhance legal deception detection practices. So does the interviewing framework knon as strategic use of evidence (SUE herafter) which originates from new perspective research findings. SUE is the strategic incremental disclosure of evidence to potentially deceptive suspects in order to find inconsistencies in their narratives or elicit confessions (Granhag et al., 2012). Some law enforcement agencies across the nation receive standardized SUE training. The SUE technique is an interviewing framework which aims to increase the elicitation of cues to deception and confessions by incrementally disclosing evidence. Granhag et al. (2012) investigated the effects of differing disclosure methods of evidence. In real world applications, interviewers have background knowledge of the suspects' actions and strategically disclose that information when the interviewers feel it would be the most advantageous (Granhag et al., 2007). Granhag et al. (2012) cite that SUE training increases deception detection accuracy rates as well as increased the chances of eliciting confessions. In fact, research who have received such training report that more confessions are being elicited from suspects as a result of such training (Vrij, Leal, Mann, Vernham, & Brankaert, 2015). Further, it was found that police officers who were trained in SUE achieved an accuracy rate of

85.4% while those who did not receive training exhibited nominal, near-chance accuracy rates (56.1%) (Hartwig et al., 2006).

Applications of new perspective research which investigate content in context are being employed in law enforcement practices as well. For example (Levine et al., 2005) found that when trained police interrogators have access to content in context about the situation in questions, the exhibit higher-than-average accuracy rates. Furter, deception detection methods are designed to include content in context in order to inform veracity judgements of messages (Blair et al., 2010).

Certainly, new perspective research applications are similarly expanding the field of deception research and human communication as well. The theoretical assumptions which inform the framework of new perspective's model of deceptive discourse production are the result of dominant perspective research criticism (Levine, 2014; McCornack, 2014). New perspective research applications are therefore similarly, but more deeply, impacting the study of deception through broadening the understanding of human communication.

Summary

The independent and intersecting research streams from the dominant and new perspectives impact society in many ways. Again, a thorough list of every way which deception detection research has been applied in society would be beyond the scope of this report. Further, it would be impossible to know all of the ways which deception research has impacted society. Therefore, the implications and applications discussed in this section were chosen because of their human communication origins and their highly respected nature among deception scholars.

As it is the case in any discipline (Frey et al., 2000), the limitations and findings deception from both perspectives' research streams create new and exciting questions worth

investigating which lead to a better understanding of deception. The implications and applications of deception research also elicit important questions for future deception researchers. Next, this report will discuss some of each perspective's methodological limitations followed by some exciting and important future directions for deception research and theory. Lastly, this report will make some important concluding remarks.

Section Three- Conclusions

Deception is a fundamental aspect of human communication which likely emerged early in human evolutionary history (Livingstone & Smith, 2004). The phenomenon of deception is a common feature of day-to-day communication (DePaulo et al., 1996). In fact, people admit to including a deceptive message in 14% of their emails, 27% of face-to-face interactions, and 37% of their phone calls (Hancock, 2008). However, despite its seemingly high frequency, most communication is honest (Gilbert, 1991; Grice, 1989; Levine, 2014), and most deceitful messages are sent by a few prolific liars (Serota & Levine, 2014).

Humans have been searching for some way to detect deception for centuries (Kleinmuntz & Szucko, 1984). Contemporary deception detection research is primarily bifurcated by two perspectives. Findings and theory from both of perspectives impact society and the future of deception research in numerous ways. Therefore, it is important for this report to discuss some of the greatest limitations of extant deception research as well as the future directions of such research. Following that discussion, this report will make some important concluding remarks about the present state of deception detection research.

Limitations of Deception Research

There are many important limitations of extant deception research from both perspectives. The limitations of both perspectives present exciting opportunities to advancing the understanding of deception. Deception studies have many ecological and external validity limitations *ipso facto*. Plus, each perspective has its own limitations as a result of its theoretical conceptualization of the process of deception. This report will reflect on the limitations of deception research because unquestioned assumptions about the nature of deception has led to many grave errors including the wrongful conviction of innocent defendants (Blair, Judd, &

Chaplan, 2004; Inbau et al., 2011; Porter & ten Brinke, 2010). While this report will discuss some of the biggest ecological and external validity concerns which face deception detection, it is important to note that, like any discipline's research, it would be impossible to know *all* the threats facing the integrity of deception research (Frey et al., 2000). Because of this impossibility, coupled with the symbiotic nature of the perspective and new perspective, this report will list some of the most notable limitations of deception research in general.

Perhaps the greatest challenge for deception detection researchers is creating research methods which truly mirror real-world deception processes and contexts. Such methods are difficult to create and implement in a study for many reasons. One obstacle to ecologically valid methodologies would be the difficulty including the anxiety that is generally coupled with deception's occurrence (Buller & Burgoon, 1996), especially in legal and criminal contexts (Levine et al, 2014a). For example, real world deceivers often know that their deceptive messages potentially carry harsh relational (McCornack & Levine, 2001) and possibly negative legal consequences (Bull & Rumsey, 1988). Further, deceivers are more likely to maintain a deceitful message when there is a perceived negative consequence to being "found out" (Levine et al., 2014a). However, the replication of conditions which instill the belief that such consequences exist for research participants is nearly impossible and arguably unethical (Frey et al., 2000). Therefore, studies which fail to concoct some kind of perceived negative consequence for uncovered deception might not have as motivated deceivers as day-to-day applications.

Another ecological validity concern is the inclusion of the ineffably large number of confounding variables which exist in real-world interpersonal deception, but not necessarily in the lab. Such variables play an important role in day-to-day deception detection and an even bigger role in criminal deception detection (Vrij, Granhag, & Porter, 2010). It is difficult to

create methods in which there is much context to an organic, deceitful message. In other words, there is rarely a "back story" to a deceptive message in the lab (Porter & ten Brinke, 2010). Such context has diagnostic utility in the detection of real world deception (Blair et al., 2010; Levine, 2014; Park & Levine; 2015). Including the innumerable variables which make up the context of a complex situation is a difficult task by itself, but *also* including variables such as relational closeness, time to plan out a deceitful message, etc., would be quite the intimidating task for deception researchers.

Similarly, real-world deception detection contexts involve varying levels of perceived risk and deception severity. Each of these two variables effect the demeanors and behaviors of both the deceiver and the receiver (Mann et al., 2002), numerous other pieces of the process of deception and therefore the ability to detect deception (Porter & ten Brinke, 2010; Vrij, Grahag, & Porter, 2010). What further complicates the deception detection task even more is that these behavioral changes do not manifest on a linear continuum according to the severity of the deceitful message, or according to the perceived risk of sending some deceitful message, yet they are influenced by them (Porter & ten Brinke).

It is also difficult for researchers to create methodologies which mirror the quantity of deceptive messages that laypersons face daily. For example, most deception detection studies, especially those from the dominant perspective, include the same number of truthful messages as deceitful messages. This is what deception researchers refer to as a 50/50 truth-lie base rate. In other words, 50% of messages are truthful while the other 50% are deceitful. However, this is simply not how deception occurs outside the lab. Again, most deceptive messages are sent by a few prolific liars (Serota & Levine, 2014) and most messages are honest (Gilbert, 1991; Grice, 1989; Levine, 2014). The less deceptive messages included in a study for participants to judge,

the higher the accuracy rate of the participants (Levine et al., 2006; Park & Levine, 2015). Therefore, deception studies ought to attempt to mimic the truth-lie base rates that people encounter in their daily lives, rather than 50/50 base rates.

Researchers not only have a difficult time mirroring real-world deception processes and situations, but they also have a difficult time arguing that their findings are generalizable. Most of the participants in most deception detection studies are undergraduate college students who were enticed to volunteer for extra college course credit (Levine, et al, 2014, b; Vrij, Granhag, & Porter, 2010). Obviously, deceptive messages are sent by all kinds of persons. In fact, college undergraduates were found to send about twice as many deceitful messages as people who were not enrolled in college courses (Serota et al., 2010). Therefore, the nearly-exclusive inclusion of college undergraduates as participants in deception research makes it difficult to extend findings to more general populations.

Further, many people rely on fallacious schemas or common myths about deception detection in order to inform their veracity judgements (Vrij, Mann, Leal, & Fisher, 2010 c). For example, many people report they believe that avoiding eye contact is indicative of deception (Vrij, Granhag, & Porter, 2010). However, eye gaze aversion has not been proven to be a reliable indicator of deception (DePaulo et al., 1996; Doherty-Sneddon & Phelps, 2005; Porter & ten Brinke, 2010; Levine, 2014). Participants often rely on such false assumptions about deception which drastically alter the results of deception detection experiments. Further, dominant perspective scholars often reinforce these assumptions with their research (Porter & ten Brinke, 2010).

Participants engaging in passive deception detection may not only use fallacious assumptions to inform their decisions, but also their biases as well. For example, many people

fail to infer suspicion of a deceptive message when the person sending it appears "trustworthy." The social construction of characteristics like trustworthiness are often racially-biased and sexist (Blair, Judd, & Chapleau, 2004; Porter & ten Brinke, 2009). Such racially-biased stereotypes lead laypersons down dangerous decision-making paths. American jurors have been empirically found to give defendants with Afro-centric facial features more guilty verdicts than defendants without Afro-centric facial features (Blair et al., 2004). Jurors also will give physically attractive defendants more innocent verdicts than guilty ones (Bull & Rumsey, 1988). Therefore, it's safe to assume that research participants will engage in similar decision-making patterns as well and will thereby affect the results of deception research. Deception researchers ought to discuss and consider how such biases should be controlled in their future studies.

Summary

The limitations of deception research from both perspectives present many challenges for deception researchers. The conditions which compose external and ecologically valid research methods are difficult and maybe even impossible to include in their totality in deception research. However, these challenges along with the findings and theory from both perspectives provide space for new and exciting areas for future deception detection research which will now be discussed.

Future Deception Research Directions

In order to overcome the many challenges created by the limitations of deception detection research, scholars have the change to explore new and exciting areas for deception researchers. Also, the need to be critical of popular schemas and beliefs about deception is paramount to the field. The publication of research that challenges widespread assumptions about deception detection is essential. Faulty assumptions about deception have led to serious

consequences such as the wrongful conviction of innocent defendants (Blair, Judd, & Chapleau, 2004; Porter & ten Brinke, 2009). Such research is often met with criticism by deception detection stakeholders and practitioners. Yet, the publication of such research sparks much-needed debates and self-reflections in the field (Blair & Kooi; 2004).

While future research should be critical of widely-held assumptions about deception, future researchers also ought pioneer new frontiers of deception research and investigate new variables in the process of deception. A few important areas for future deception detection research will be recommended for each persepctive's independent research stream as well as deception research in general. Lastly, this report will then discuss some concluding remarks about deception research.

Dominant perspective future directions. The dominant perspective faces many of its own challenges. Despite it informing the vast majority of deception detection research, it has yet to generate findings which increase deception detection accuracy rates in face-to-face communication settings (Bond & DePaulo, 2006; Levine & McCornack, 2014; Porter & ten Brinke, 2010). However, because of the theoretical assumption that deceivers mentally craft their deceitful messages and then send them, the dominant perspective has uncovered ways of exploiting differences in honest and deceitful persons' communicative behaviors (DePaulo et al., 2003; Vrij, Granhag, & Porter, 2010). Future research by those using the dominant perspective will lead to exciting advances in deception detection practices. As previously discussed, one area that has been especially advanced by dominant perspective research is deception detection within CMC (Burgoon & Qin, 2006; George et al., 2008; Ludwig et al., 2016; Zhou et al., 2005). Dominant perspective research has been especially helpful in computer-mediated deception detection because of its theoretical framework. Future research from the dominant perspective

should seek to further exploit differences between the styles and linguistic behaviors of honest and deceitful computer-mediated communicators.

Researchers should expand their text corpus to include more examples of computer-mediated deception from more diverse contexts. For example, there currently exists little research examining the differences between honest and deceitful communications from corporate executives during times of organizational crises, yet they are fairly common occurrences (Chen, 2010; Gottschalk, 2011), and often their entire inter-organizational communications are made public as a result of subpoenaing. Such research would not only further generalize deception detection findings, but it would also grow the relatively small pool of texts in which ground truth is known and the consequences for uncovered deception are great. Studying these kinds of examples of computer-mediated would likely lead to the uncovering of communicative traits which are exclusive to deceptive messages. If not, it would still lead to a deeper understanding of real-world computer-mediated deception as well as organizational communication in general.

Of course, although people are more likely to engage in deception in CMC (George et al., 2008; Kahn et al., 2007), there is also a pressing need to continue to examine deception within face-to-face interactions. Dominant perspective research has searched differences between honest and deceitful persons numerous times. Meta-analytic data consistently show that, although there are differences between truthful and deceptive communicative behaviors, those differences are faintly correlated with deception, and do not improve the deception detection accuracy rates (DePaulo et al., 2003; Hauch et al., 2016; Vrij & Granhag, 2012). One of the ways to improve deception detection accuracy rates could be investigating the variables which might mediate or moderate deception detection ability. For example, digital database searches yield few examples of researchers studying variables like the amount of time between choosing to send a

deceitful message and actually sending it; the amount of suspicion, relational closeness of message senders and receivers, etc. Examining these kinds of isolated variables could likely lead to a greater understanding of human deception and possibly even further distinctions between honest and deceitful communications.

For example, the research which investigates deception rehearsal time is scant. Extant deception rehearsal time research produced mixed and contradictory findings (Littlepage & Pineault, 1985; Walczyk, et al., 2013). Future dominant perspective research should examine the temporal features of deception and the ways they affect the deception detection task. Further, dominant perspective scholars in particular should examine the ways which the temporal features of deception can be exploited to generate more reliable methods of deception detection.

Dominant perspective deception detection research could also benefit from further meta-analysis. Meta-analyses have served well to pinpoint possible indicators during face-to-face interaction of potentially deceptive individuals with more statistical precision (Bond & DePaulo, 2008). However, most dominant perspective research is designed to further examine possible distinctions between honest and deceptive communications. Much of these data collected since 2006 have not been included in meta-analyses. Such analyses create deeper understanding of deception by being effective means of identifying unreliable cues to deception and distinguishing them from the reliable ones. Therefore, future dominant perspective researchers should conduct more meta-analyses especially with data which measure potentially mediating or moderating variables of deception detection ability.

The future of the dominant perspective has the potential to greatly advance deception detection research. Because of its theoretical framework, dominant perspective research will continue to enhance the understanding computer-mediated deception research. Expanding the

corpus of analyzable texts will greatly aid in this endeavor. Also, the dominant perspective will serve as a nice point of view for researchers to find more differences between honest and deceptive communication if researchers examine any potential mediating and moderating variables. Also, new meta-analyses of dominant perspective research would likely help isolate those variables and advance the deception detection field in general. These future directions for dominant perspective research will lead to an enhanced understanding of deception in general and will also provide more meaningful data which will aid in the distinction between honest communication and deception.

New perspective future directions. Again, while the dominant perspective views deception as happening after an *a priori* intent to deceive another, the new perspective views the choice to deceive another and sending the deceptive message as occurring simultaneously (McCornack et al., 2014). Such an important difference leads to drastically different research methods and, consequently, findings from the new perspective. Therefore, this report will now quickly list some important future directions for the new perspective.

The two most notable theories which inform the new perspective are truth-default theory (TDT; Levine, 2014), and information manipulation theory 2 (IMT2; McCornack, et al., 2014). Both of those theories make the assumption that society requires most humans to believe most communication most of the time. This can potentially lead to what researchers call the ostrich effect (Vrij et al., 2008). The ostrich effect occurs when the receiver of a deceptive message infers suspicion about the veracity of the message, yet still chooses to remain ignorant to its veracity. There exist few studies conducted to examine this phenomenon, yet its existence has important implications for the new perspective and deception research in general. For example, there likely exist some threshold where the perceived immorality of a potentially-deceptive

message is so great that the message recipient then starts to want to uncover the suspected deception. Perhaps laypersons perform optimally at detecting deception when such thresholds are passed. Such a prediction is unsurprising as motivated judgers are better at detecting deception than unmotivated judgers (Stiff & Miller, 1986; Porter & ten Brinke, 2010). Future research from the new perspective should examine this ostrich effect in order to uncover more about the nature of deception and the process of deception detection.

Of course, the ostrich effect is an uncommon occurrence. People who infer suspicion about a message's veracity generally will continue to attempt to uncover the deception (Buller & Burgoon, 1996), learn the truth (Serota et al., 2010), and often the deceptive message sender's motivation (Levine & McCornack, 1990). There exist little research on what triggers an individual to abandon the truth-default state and infer suspicion. It is important to note that these trigger events cause someone to only temporarily abandon the truth-default state and infer suspicion. After its abandonment people then scrutinize the previous communication from the message sender and all future communication until either returning to the truth-default state, or abandoning the suspicion state and actively inferring deception. Levine (2014) argues that trigger events for the abandonment of the truth-default state include, but are not limited to, a projected motive state for deception; behaviors that are associated with deception; inconsistencies between communicated content and reality; lack of message coherence; or information from a third party which warns of potential deception (p. 387). Future new perspective research should examine these events to better understand how people deal with suspicion. Suspicion plays an important moderating role in the detection of deception. Overly suspicious individuals tend to be poor deception detectors (Bond, 2007; Johnson, 2006; Miller & Miller, 1998; Vrij, Granhag, & Porter, 2010), while unmotivated judges perform almost as poorly (Vrij & Mann, 2001). Future research

within the new perspective should uncover what suspicion's role is in deception detection as well as how these events affect the ability to detect deception as well.

Levine (2014) argues that the threshold for abandoning suspicion and actively inferring suspicion is less sensitive than the threshold for abandoning the truth-default state. Between the two thresholds is where suspicion exists. Levine argues that, "[suspicion] is a state of suspended belief…[which] is not retained indefinitely, and either evidence is obtained sufficient to cross the second threshold and infer deceit, or the person will eventually revert to the truth-default" (p. 387). New perspective researchers should search for what kinds of evidence, information, and behaviors triggers a person to pass the next threshold and actively infer deceit. The new perspective, and deception research in general, would also benefit from research which examines occurrences of individuals correctly inferring suspicion after receiving a deceptive message, yet fail to correctly infer deception and return to the truth-default state. Deception scholars from both perspectives generally agree that deceivers are sensitive to receivers' suspicion and consequently change their communicative behaviors to avoid the inference of deception (Buller & Burgoon, 1996; Burgoon & Levine, 2010; Vrij, Granhag, & Porter, 2010). Research which further examines these trigger events and the suspicion state in between the TDT thresholds will greatly advance deception detection research.

When viewed through the new perspective, deceivers are much more elusive than when viewed through the dominant perspective. This is because deceivers, as theorized by new perspective scholars, do not choose to deceive others before crafting a deceitful message. There is no *a priori* intent to deceive another as theorized in the dominant perspective, but rather the choice to deceive another is instantaneous and occurs as messages are being sent (McCornack et al., 2014). Under this logic, strategic questioning leads to more confessions and more accurate

deception detection rates than demeanor-based deception detection (Blair et al., 2010; Levine et al., 2014a; Vrij & Granhag, 2012). Future research should examine what questions best elicit confessions or detectible differences between honest and dishonest communicators. Further investigation into strategic questioning of deceptive individuals can improve the ways by which suspects are interrogated, such as the widely-used, yet error-prone REID technique of interrogation (Levine & McCornack, 2014; Porter & Granhag, 2010; Vrij & Granhag, 2012). Therefore, new perspective research should continue to examine new methods of detection deception such as strategic questioning.

Some new, previously discussed methods of deception detection have been empirically studied by new perspective scholars (e.g. Granhag et al., 2012; Levine et al., 2014a; Lui et al., 2010). These new methods are argued to be more effective than traditional methods employed by dominant perspective research because they involve active message judges rather than passive ones. In other words, these methods, such as SUE, strategic questioning, and imposing cognitive load, are effective, not only because of their ability to elicit confessions and exploit differences between honest and dishonest individuals, but because of the ecology of their deception detection contexts. Passive methods of deception detection do not mirror the real-world conditions in which actual deception takes place (Vrij & Granhag, 2012). While dominant scholars argue that passive and active judges both exhibit near-chance accuracy rates (Burgoon, Buller, & Floyd, 2001; Burgoon, 2015), new perspective research has consistently found that active judges perform significantly better than passive judges at detection deception accurately (Levine et al., 2014b; Vrij et al., 2015; Vrij & Granhag, 2012). Therefore, new perspective research should continue to examine active participation deception detection methods. Such research will

improve the ecological validity of deception detection studies as well as lead to higher deception detection accuracy rates.

The future of deception research is exciting. Again, the field of deception detection research is primarily bifurcated into two perspectives. Their different conceptual and theoretical backgrounds make each perspective well-suited to examine different pieces of the deception puzzle. For example, the dominant perspective is well-suited to examine deception in CMC (Burgoon & Qin, 2006), while the new perspective is well-suited to examine deception in interrogative contexts (Park & Levine, 2015). The trajectory of both perspectives' diverging and sometimes intersecting research streams will likely lead to a greater understanding of the nature of deception as well as improved deception detection methods. However, despite the differences between the perspectives, it is imperative that researchers are critical of their own theoretical assumptions. Also, there is an ever-pressing need for researchers from both perspectives to work together in order to investigate the possibility of utilizing mixed methods of deception detection.

Future directions for deception research in general. There exists a large gap between deception detection research and deception detection practitioners (Blair et al., 2010). The disconnect between deception research and practice results in some harsh negative consequences such as the hampering of deception detection ability. Deception scholars ought to engage in research which aims to close the gap between researchers and practitioners in order to improve the quality and effectiveness of deception detection practices the world over.

As previously stated, numerous law enforcement agencies are important stakeholders in deception detection research and practices. However, much deception detection research has failed to mimic the conditions which compose real-world deception detection settings adequately (Vrij et al., 2010a; Levine et al., 2014a; 2014c). Most extant deception research has been

conducted by examining potentially deceptive messages about past actions (Burgoon & Levine, 2009; Levine et al., 2016; Porter & ten Brinke, 2010; Vrij et al., 2010a). However, those who most frequently engage in real-world deception detection are assessing the veracity of claims about future intentions (i.e. "What is the nature of your visit to America?"). Future deception detection research should examine deception in future intentions. Such research has the potential to improve processes which are designed to protect societies such as airport screeners and other law enforcement practices.

Deception likely appears in different contexts at different frequencies. For example, airport screeners most likely rarely encounter someone who is deceiving them, especially compared to the large number of honest persons who fly everyday devoid of illegal or malicious intentions. However, police interrogators surely encounter deception more frequently. More importantly, the belief that police interrogators often encounter deception often inhibits their ability to detect deception accurately, because it creates a bias to quickly judge messages as dishonest (Garrido, Masip, & Herrero, 2004; Masip et al., 2005; Meissner & Kassin, 2004; Park & Levine; 2015). Different situational expectations about the frequency of deception likely play an important role in deception's success and its detection. For example, law enforcement personnel generally are quick to infer suspicion and even deception as they expect it in their interactions with criminal suspects (Masip et al., 2005; Meissner & Kassin, 2004; Porter & ten Brinke, 2010; Vrij et al., 2010a). Future deception research should examine different probabilities of the occurrence of deception. Research which examines the differing contextual probabilities of deception will lead to improvements in deception detection practices.

Deception detection research is concerned with the deceptive and honest habits of individuals. However, many criminals attempt to deceive others by working in pairs (e.g. Vrij et

al., 2009) or in networks (e.g. Hart & Lind, 2011; Vrij et al., 2010a). For example, Enron executives successfully deceived their employees and stakeholders by their collective sending of deceitful messages (Chen, 2010; Gottschalk, 2011). Future research should examine the complexities of large networks of individuals and dyads engaging in deception rather than just deceptive individuals.

As previously mentioned, deception research is primarily focused on the process of deception, rather than on the traits of individuals sending deceptive messages. Researchers could also gain much by investigating the behaviors and characteristics of those individuals who are proficient at deceiving others. Vrij et al. (2010) argue that the investigation of characteristics of "good liars" would lead to a deeper understanding of human deception. For example, despite the widespread finding that deceiving is more cognitively taxing than truth-telling (Buller & Burgoon, 1996; Burgoon et al., 2016; Burgoon & Qin, 2006; McCornack et al., 2014), a small percentage of people who are considered "good" or "proficient liars" do not find deceiving to be cognitively challenging. If scholars uncover why deceiving is so easy for this population, more interrogative techniques can be created and implemented, such as increasing cognitive load (Vrij et al., 2008), strategic questioning (Levine et al., 2014a), asking unanticipated questions (Lui et al., 2010; Vrij et al., 2009), or strategically disclosing evidence incrementally (SUE; Vrij et al., 2015).

Additionally, some criminals will retell major lies for years (Porter & Woodworth, 2007) and even learn to believe them thus making the deception detection task all the more difficult (Porter & ten Brinke, 2010). These prolific liars have much to offer researchers. Such prolific deceivers have important, valid knowledge about deception and therefore are often successful at deceiving others (Hartwig et al., 2004). Uncovering what makes these deceptive people seem

"trustworthy" or "believable" will allow researchers to isolate those qualities and control for them in the field. Further, understanding the prolific liar or even the pathological liar will help generate better insight into deceptive intentions.

Of course, such qualities and intentions are bound to their cultural contexts. Different cultures treat deception differently than the Western cultures which are the origins of most deception detection research. For example, many governments, including the United States, use coercion or torture in order to attempt to detect criminals' deception. Such methods are not only grossly unethical, but they are proven to be ineffective means of detecting deception (Cortanzo, Gerrity, & Lyker, 2007). Yet, many nations, including the United States, continue to endorse such inhumane interrogation tactics (Porter & ten Brinke, 2010). Research that is critical of such unethical interrogation techniques must be published.

Further, there exists scant research on any cross-cultural differences or similarities in deceptive behaviors or attitudes about deception, in general (Burgoon & Levine, 2010). While most cultures condemn deception, little research has examined differences in how individuals from different cultures engage in deception or attempt to uncover deception (Levine et al., 2016; Levine & Kim, 2010). Future deception research should seek to expand the populations of research participants to more diverse cultures. The ability to more broadly generalize deception research findings would generate better ways of uncovering deception.

Another future research direction for deception detection researchers is the investigation of deception detection expertise. A small percentage of people are particularly adept at detecting deception accurately. Currently, there are five dominant views that researchers take when considering this deception detection expertise (Levine et al., 2014, a). Deception researchers tend to view expertise 1) as having little effect on detection ability (Aamodt & Custer, 2006; Bond &

DePaulo, 2008); 2) as being inferior to laypersons' abilities because experts are lie-biased (Bond, 2008); 3) as being useful for detecting high-stakes lies rather than trivial lies (O'Sullivan, Frank, Hurley, & Tiwana, 2009); 4) as being a function of a the ability to prompt diagnostically useful information from strategic questioning (Levine et al., 2014, a); or 5) as being simply really good at detecting deception (O'Sullivan & Ekman, 2004). Future research should examine what specifically makes these people perform so well at deception detection tasks.

In short, the field of deception would greatly benefit from publishing literature that is critical of popular research methods as well as articles which investigate new ones. Deception detection scholars argue that the gap between researchers and practitioners decreases meta-analytic accuracy rates across studies; and, those low accuracy rates further increase the gap between researchers and practitioners (Burgoon & Levine, 2009). Therefore, researchers should work with law enforcement communities and deception professionals in order to create more ecologically valid methodologies.

These future directions for deception detection research will lead to a greater understanding of the phenomenon of deception. As researchers explore the complexities of deception, more information about deception's role in human communication will be uncovered and generated. However, the perspectives which researchers take drastically alter their study's goals and results. Consequently, each of the two perspectives has their own methodological and theoretical strengths.

Summary. To list all of the variables which likely affect deception detection would be impossible. To even attempt such a feat would be beyond the scope of this report. However, the future direction discussed in the previous section were chosen because of their apparent potential benefits. While any investigative, scientific communication research will lead to a greater

understanding of human communication (Frey et al., 2000), not all novel deception research would be beneficial. For example, deception detection methods which ask layperson participants to observe video-recorded interviews of potentially deceptive individuals and then judge their messages as either honest or deceptive are over-employed. Such research methodologies consistently lead to the same finding: research participants, regardless of any training they receive, consistently perform at basically a rate of chance at distinguishing truths from falsehoods (Aamodt, & Custer, 2006; Bond & DePaulo, 2006; Hauch et al., 2016). Therefore, new methods and research designs must be scrutinized in order to advance the field of deception detection research. It is through the future directions of deception research from both perspectives that solutions to deception detection will be uncovered. Without such research, deception detection methods will remain error-prone and unjust (Vrij, Granhag, & Porter, 2010).

Concluding Remarks

While it is easy to romanticize the future of deception detection research, there are many obstacles which inhibit effective deception detection. The obstacles which impede deception detection are complex and carry severe negative consequences to society at-large. Inaction in addressing these obstacles will lead to the perpetuation of fallacious beliefs about deception, perpetuation of fallacious means of detection deception, and perpetuation of poor deception detection practices by law enforcement agencies. Therefore, to conclude this report, some of these obstacles will be discussed followed by some brief conclusions.

Obstacles. First, it is important to make the distinction between limitations of deception detection research and obstacles for deception detection research. Limitations to research refer to the ways that research findings are unable to be generalized well due to aspects about the research (Frey et al., 2000). Obstacles refer to things which impede research, yet are external to

the research conducted, and are unable to be controlled by the researcher. For example, a limitation of governmental disaster response research could be a small sample size of disaster responses. However, an obstacle for governmental disaster response research might be uncertain or insufficient congressional funding of such research. The former can be overcome by the researcher, while the latter can't necessarily be controlled by the researcher. Also, it is important to note that ethical safeguards, such as institutional review board approvals, are not obstacles to deception research as they protect research participants and enrich scientific literature.

Perhaps the single greatest obstacle facing deception detection research stakeholders is the persistent pervasiveness of incorrect, wide-spread beliefs about deception. Although, some behavioral cues have found to be indicative of deception (e.g. DePaulo et al., 2003), they are not statistically reliable or helpful in the successful detecting of deception (Bond & DePaulo, 2006; Vrij & Granhag, 2012). However, these assumptions are so ingrained in societal norms that children as young as five-years-old rely on bogus cues to deception when actively infering deception (Rotenberg, & Sullivan, 2003). Rotenberg and Sullivan argue that this occurs because the association between deception and immorality is taught early in life and these fallacious maxims such as “liars avoid eye contact” are spread quickly through media artifacts and popular culture. Law enforcement officers alarmingly rely on such maxims to distinguish dishonest suspects from honest ones (Garrido et al., 2004; Johnson, 2006: Kassin et al., 2005; Vrij & Mann, 2001). Deception researchers ought to attempt to close the gap between themselves and the general public by educating the public on avoiding such pitfalls in deception detection.

Similarly, people tend to cultivate an over-reliance on nonverbal communication, especially in informing their veracity judgements (Aamodt & Custer, 2006; Rotenberg & Sullivan, 2003; Porter & ten Brinke, 2010). This occurs not only because of popular culture’s

endorsement of such reliance (De Becker, 1997), but also because individuals rely on nonverbal communication in order to inform many other things besides message veracity such as gender identity, sexual orientation, and approachability (Vrij, Granhag, & Porter, 2010). This over-reliance on nonverbal communication helps individuals make quick decisions, however such quick decisions do not fare well in deception detection. So-called deception detection experts often report that they rely on nonverbal cues to inform their decisions (Johnson, 2006, yet these "experts" exhibit nearly the same near-chance levels of deception detection accuracy as laypersons (Bond & DePaulo, 2008). However, laypersons report that they generally do not rely on nonverbal communication to uncover deception in their day-to-day interactions (Park et al., 2002). Therefore, researchers need to search for ways to overcome this over-reliance on nonverbal communication in the lab and in law enforcement communities.

Further, law enforcement officials generally are so over-zealous and overly-suspicious that they exhibit lower accuracy rates than lay persons (Bond & DePaulo, 2008; Kassin et al., 2005; Levine et al., 2005; Millar & Millar, 1988; Vrij et al., 2001). Suspicion plays an important role in the detection of deception (Buller & Burgoon, 1996; Levine, 2014; Burgoon & Levine, 2010). However, perpetual suspicion greatly reduces one's ability to detection deception accurately (Johnson, 2006; Levine, 2014). Believing a message is the first step to evaluating its veracity because to outright code a message as deceptive before *knowing* if the message in question is actually deceptive inhibits investigation (De Becker, 1997). Law enforcement officials and deception detection professionals exhibit such high suspicion because they are in contexts where deception is likely (Kassin et al., 2005). However, their higher-than-average suspicion levels work against their best interests and the interests of innocent suspects (Blair &

Kooi, 2004). Deception scholars should search for safeguards which stop or at least slow the premature labeling of a message as deceptive.

Lastly, the law enforcement agencies which have a great stake in deception detection research are also obstacles themselves. Again, law enforcement agencies at all levels all over the world receive deception detection training from the widely-used REID Technique of interrogation (Inbau et al., 2011). The institutions responsible for the implementation of such trainings are often working against their own interests by avoiding the implementation of new deception detection methods. These institutions assert that the current methods are sufficient and that employing new methods would be too great a financial burden on law enforcement communities (Porter & ten Brinke, 2010). However, these assertions are incorrect and dangerous (Kassin et al., 2005). Therefore, it is important that researchers work with practitioners in criticizing current deception detection methods like the BAI in the REID Technique of interrogation as well as implementing and enhancing new deception detection methods.

Overcoming these obstacles is no easy task for deception detection researchers. However, they present opportunities for deception researchers to expand their spheres of influence and to close the gap between researchers and practitioners. Also, disregarding these obstacles to deception research will slow the advancement of the field as well as set a poor precedent for future deception detection researchers.

Conclusions. The bifurcation of the deception detection research literature has largely been a good thing for the field (Burgoon & Levine, 2010). Regardless of which perspective researchers take on the process of deception, their goals are to find more effective and accurate ways to detect deception. Each perspective has its own pros and cons, and each perspective

contributes to the conversation in important ways. The review of each perspective's extant literature led to the following four conclusions which will conclude this report.

First, although each perspective conceptualizes the process of deception differently, it is likely the case that human deception occurs in some mixture of the two ways. On one hand, communicators do mentally craft some deceptive messages with an *a priori* intent to deceive another. On the other hand, deceivers create and send impromptu lies while uttering sentences. Therefore, despite the overt bifurcation of deception detection literature, it is important to acknowledge that deception occurs likely in some mixture of both perspectives' conceptualization.

Second, law enforcement agencies are particularly concerned with uncovering deception quickly. Dominant perspective researchers are optimistic in their assertion that deception can be uncovered quickly. However, if deception is to be detected immediately after its received and without a large amount of context or background information, it seems that the dominant perspective is best fitted to achieve these ends, despite not being successful yet. Whether this desired quick detection is based on observable behavioral changes, demeanor, or physiological measures, such mechanisms need to be isolated and investigated (Burgoon & Levine, 2010).

Third, most deception detection research investigates human deceivers, human message recipients, and human judges. Currently, even the most promising methods of deception detection still exhibit relatively low accuracy rates. On average, people only perform at basically a rate of chance at successfully identifying truthful messages and deceptive messages (Blair et al., 2010; Bond & DePaulo, 2006; Levine et al., 2014b; Vrij & Granhag, 2012). Therefore, some research is examining the possibility of removing human error by attempting to automate deception detection (Burgoon & Qin, 2006). The new advent of facial recognition, emotion

recognition, and voice stress analysis software is particularly exciting for deception detection stakeholders. These software packages could one day serve as effective means to uncovering deception. Removing the human judge and adding in automated detection methods could prove to be effective (Hancock et al., 2009; Ho & Hancock, 2018).

Lastly, and most importantly, the deception detection training method, the REID technique of interrogation, which law enforcement communities all over the world employ, has been discredited numerous times (Porter & ten Brinke, 2010). In fact, when people are trained on the REID Technique's cues to deception (Inbau et al., 2011), they perform worse at detecting deception than people who do not receive training (Kassin & Fong, 1999), and worse than those who receive bogus training (Levine et al., 2005). Put simply, the REID Technique does not work. However, a quick glance at the REID Technique manual reveals brief warnings about the unreliability of cues to deception. Those warnings are quickly "lost in the ensuing detailed and enthusiastic descriptions of how behavior and speech differs between truth tellers and liars" (Vrij et al., 2010a, p. 5). Those descriptions are often accompanied by photographs which display behavioral cues such as "truthful forward posture" and "deceptive adaptor behaviors" (Inbau et al., p. 124-125). Such captioned pictures suggest that there do exist reliable cues to deception which are easy to notice. However, at the time of this report's submission, no scientific research supports this claim. Cues to deception are generally unreliable and faint (Burgoon & Levine, 2010; DePaulo et al., 2003; Levine et al., 2016; Vrij et al., 2010b).

Even more alarming, the REID technique manual states, "If the suspect perceives that the investigator is not certain of his [sic] guilt, he [sic] is unlikely to confess. Consequently, we recommend that the investigator initiates the interrogation with a direct statement indicating absolute certainty in the suspect's guilt" (Inbau et al., 2011, p. 193). This is in direct, ethical

contrast to the American legal system's proud belief that suspects are considered innocent until proven guilty. The manual even states that because of its accusatory method, the REID Technique is likely no produce false confessions. The latest edition of the manual includes an entire chapter dedicated to false confessions because they are so common in REID interrogations. Therefore, it is clear to see the problem of using the REID technique to interrogate potentially deceptive suspects.

There is an urgent need for deception detection researchers from both perspectives to continue to scrutinize this widely-used method and to offer up alternatives. It should not be acceptable to any communication studies scholar that such poor methods of deception detection are employed at all levels of law enforcement. Currently, there exists no surefire way to distinguish truths from falsehoods. Therefore, it is deceptive to pretend that one does exists and ought to be taught to law enforcement agencies. Regardless of differences between the two perspectives, the problem of the REID technique's popularity needs to be addressed. Improving law enforcement deception detection ability is imperative.

Summary. These four conclusions are a result of the comprehensive review of dominant and new perspective deception research. That review lead to the conclusion that neither perspective is best equipped to investigate deception. However, due to the dominant perspective's theoretical foundation, it is likely better at researching deception within CMC. Also, removing the human element to making veracity judgements about messages is a frontier worth exploring. Additionally, the new perspective's dialogic approach to actively questioning potentially deceptive persons makes it methodologically superior in its accuracy and is therefore better suited for researching ways of uncovering deception. Lastly, it is imperative that deception scholars scrutinize the unsubstantiated deception detection training which law enforcement

agencies receive around the world. These conclusions are only some of the innumerable benefits to reviewing and reporting the bifurcation of deception detection literature into two different perspectives.

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