FACIAL MIMICRY VERSUS PERSPECTIVE-TAKING: DECODING INSTRUCTIONAL
SETS AS EMPATHY-INDUCING STRATEGIES

A Thesis
By
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Abstract

FACIAL MIMICRY VERSUS PERSPECTIVE-TAKING: DECODING INSTRUCTIONAL
SETS AS EMPATHY-INDUCING STRATEGIES

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Much of human interaction and communication comprises verbal and nonverbal

information. While verbal communication contains important lexical information, research

has shown that nonverbal communication is often more important to the success of an

interaction than is verbal. Improper use and interpretations of nonverbal communication

have been shown to be related to social and personal distress. This distress may be due in

part to a lack of understanding and empathy for the target. Previous research has identified

both perspective-taking and facial mimicry as potential strategies that can be used to

understand or decode nonverbal communication, which promote empathic responding and

prosocial behaviors toward a target. The current study sought to understand better these two

proposed decoding strategies by presenting participants with an interpersonal situation (a

betrayal) that would require the use of empathic responding to achieve conflict resolution

between friends. The results demonstrated that when individuals engaged in either of the two

decoding strategies, they reported significantly higher empathic understanding of the target

and self-other overlap (a prosocial outcome) relative to those not instructed to engage in a particular strategy. No significant differences were found between the two instructional conditions and the control condition on measures of liking or forgiveness. These findings support the use of both nonverbal decoding strategies (perspective-taking and facial mimicry) as means of enhancing interpersonal communication.

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Finally, I would like to thank both my husband, Luke Wagoner, and my family, Gordon, Ann, and Holly Cooke, for their unconditional support, sacrifices, and encouragement. You have always believed in my dreams and taught me that anything was possible.

Dedication

I would like dedicate this accomplishment to all the inspirations in my life, personal,

academic, and literary. Without their example, encouragement, and advice, I would not be

the person I am today.

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Abstract

Much of human interaction and communication comprises verbal and nonverbal information. While verbal communication contains important lexical information, research has shown that nonverbal communication is often more important to the success of an interaction than is verbal. Improper use and interpretations of nonverbal communication have been shown to be related to social and personal distress. This distress may be due in part to a lack of understanding and empathy for the target. Previous research has identified both perspective-taking and facial mimicry as potential strategies that can be used to understand or decode nonverbal communication, which promote empathic responding and prosocial behaviors toward a target. The current study sought to understand better these two proposed decoding strategies by presenting participants with an interpersonal situation (a betrayal) that would require the use of empathic responding to achieve conflict resolution between friends. The results demonstrated that when individuals engaged in either of the two decoding strategies, they reported significantly higher empathic understanding of the target and self-other overlap (a prosocial outcome) relative to those not instructed to engage in a particular strategy. No significant differences were found between the two instructional conditions and the control condition on measures of liking or forgiveness. These findings support the use of both nonverbal decoding strategies (perspective-taking and facial mimicry) as means of enhancing interpersonal communication.

Keywords: emotions, facial mimicry, perspective-taking, empathy, nonverbal

Facial Mimicry Versus Perspective-taking: Decoding Instructional Sets as Empathy-inducing Strategies

As social creatures, human beings spend a great amount of time trying to understand others. When individuals communicate with one another, the informational content involves both verbal and nonverbal communication between the parties. During a conversation, each partner serves as a both an encoder of information (sender) and decoder (receiver and interpreter) (Zuckerman, Lipets, Koivumaki, & Rosenthal, 1975). Although verbal communication is overtly expressed, interestingly, it is often not as important as the nonverbal information (Koerner & Fitzpatrick, 2002; Watzlawick, Beavin, & Jackson, 1967). That is, the true meaning of a conversation can be found in the nonverbal cues of the speaker.

To illustrate, comparisons of email, voice message, and direct personal communication have found that individuals were more able to communicate effectively their emotions when using interpersonal communication strategies that allowed for the most nonverbal information (i.e., direct personal communication, Kruger, Epley, Parker, & Ng, 2005). However, despite the inherent loss of information as the levels of nonverbal cues decreased, participants were just as confident in their ability to communicate affect and emotions effectively in emails as in direct personal communication.

Bryon (2008) propounded that e-mails are often understood by the receiver as more neutral or more negative than intended by the sender, precisely because they lack nuanced nonverbal cues. These might include voice inflection, facial expressions, or bodily movements. Walther and D'Addario (2001) found this neutrality and negativity explanation to be true even when e-mails contain emoticons, or faces created by different combinations of characters such as a colon and an ending parenthesis for a smiley face. Waldvogel (2002)

suggested that another cause of miscommunication is the inability to clarify misperceptions as they happen. Instead, miscommunications in e-mails are clarified through more e-mails, which may compound issues, or persist due to the receiver's unwillingness to ask for clarification or lack of awareness of the need for clarification. E-mails are simply one example of where miscommunication can occur due to missing improper nonverbal cues. Miscommunication resulting from a misunderstanding of nonverbal cues can occur in face-to-face interactions as well and may perhaps be more complex to understand and to potentially correct than verbal communication.

Importance and Deficits of Nonverbal Communication

Nonverbal communication from the sender, or encoder, can include but is not limited to body movements, facial expressions, tone of voice, and distance between the communicators (Duncan, 1969). Upon receiving the verbal and nonverbal information, it becomes the receiver's job to understand, or decode, the nonverbal information for meaning beyond that of the verbal information. Ekman and Friesen (1981) offered five mechanisms for how nonverbal communication contributes to verbal communication. The first, repetition of the verbal information, allows the sender to reiterate his/her verbal information for clarification or for emphasis. The second, substitution of verbal information with nonverbal, allows the sender to communicate without the use of verbal information, (e.g., forefinger on one's mouth to indicate a need for quieting). The third, complementation of verbal with nonverbal information, could be used by a sender to emphasize verbal information, (e.g., raising one's arms in the air in addition to yelling excitedly). The fourth, contradiction of verbal with nonverbal information, allows the sender to knowingly or unknowingly use nonverbal information to contradict his/her verbal information, as in the case of lying.

Finally, the fifth, emphasis of verbal by the nonverbal information, allows the sender to accentuate pieces of the verbal information that he/she deems important (e.g., pointing to an object to which he/she is referring). Displaying nonverbal behavior could serve to reveal a true or facetious representation of the sender's internal emotional state that may or may not be intentionally conveyed to the receiver (Feldman & Rimé, 1991). As a sender, nonverbal communication allows one to relay more than just words in an interaction, or even a message without the use of words. Consider a situation in which a person wishes to communicate to a friend or partner the desire to leave a social gathering by using nonverbal communication. This individual may do so by making eye contact with the person and nodding his/her head in the direction of the door. The receiver is now responsible for decoding the body language and understanding that desire to exit.

Nonverbal communication by the receiver can also serve to send positive or negative external feedback to inform the sender his/her nonverbal cues have been "perceived and evaluated" (p. 54, Ekman & Friesen, 1981). Positive external feedback, such as head nodding in agreement or smiling, can serve to demonstrate to the sender that one understands and possibly empathizes with a partner. Negative external feedback, a frown or an angered facial expression, can demonstrate that one disagrees or dislikes the message the sender is giving. As in the example of the party, once the partner's desire to leave is understood the receiver could respond by nodding the head and walking to the door to indicate agreement, ignoring the behavior, or demonstrating some sign of disagreement (e.g., shaking one's head or scowling).

Because understanding social situations and communication has been implicated as an important factor in an individual's social interactions, deficits in nonverbal

communication may be detrimental to one's social standing and interpersonal relationships

(Halberstadt, Denham, & Dunsmore, 2001; Nowicki & Duke, 1989). There appear to be

social and personal liabilities associated with deficits for both encoding and decoding. For

example, Custrini and Feldman (1989) found evidence for a connection between school-aged

children's low social competence and their nonverbal abilities. These children completed a

nonverbal test in which they first viewed video clips and described their emotional reaction.

The children's nonverbal facial and bodily reactions to the video clips were assessed for

encoding accuracy. Subsequently, the participants viewed other children watching video clips

similar to those they had just watched. After watching the targets react to the videos, the

children were asked to name the emotional reactions that the target expressed. Children's

decoding accuracy was measured by their ability to accurately label the target's reaction.

Custrini and Feldman found that both encoding and decoding scores were positively related

to parents' ratings of their child's social competence. Boyatzis and Satyaprasad (1994) found

this to be true of teachers' estimates of children's popularity ratings and their nonverbal

abilities as well.

To gain a better understanding of how encoding and decoding are related to social

and personal outcomes, Nowicki and Duke (1992) designed an experiment in which they

compared children's peer ratings (social outcome) and academic achievement (personal

outcome) with scores on tests of facial expressions and tones of voice. To acquire peer rating

scores, researchers asked children to indicate the classmates who they liked and disliked.

Academic achievement was measured using student's scores on standardized tests found in

their school records. The test of decoding included both facial (Diagnostic Analysis

Nonverbal Accuracy; Nowicki & Duke, 1989) and tonal decoding. The tonal decoding was

measured by asking children to decode a neutrally-worded sentence spoken by a 10 year-old female in a way that conveyed one of four emotions: happiness, sadness, anger, or fear. The subjects were asked to name the emotion being conveyed. Accuracy scores were created for both tests of nonverbal decoding. In this way, the researchers were able to create a multi-faceted measure of nonverbal communication and compare it against the children's social and personal outcome measures. They found that nonverbal decoding skills were positively related to social and personal outcomes. Those who scored high in nonverbal decoding skills were rated higher by their peers in popularity and had higher academic achievement. In the same way, individuals who scored low in nonverbal decoding skills were rated lower by peers in popularity and had lower academic achievement. Consistent with this finding, Izard et al. (2001) found that nonverbal abilities of five year olds positively correlated with their academic and social achievement at age nine. In addition, social and personal liabilities associated with poor nonverbal skills, particularly those of decoding, start in childhood and often persist into adulthood (Nowicki & Duke, 1992).

One explanation for decoding deficits is the complexity and cognitive effort required for nonverbal communication (Phillips, Tunstall, & Channon, 2007). To test this posibility, Phillips et al. (2007) examined the relationship between working memory, which allows for the mental manipulation of information (Baddeley & Hitch, 1974), and nonverbal decoding by having three groups of participants complete a decoding task, making decisions about facial expressions. The three groups consisted of one control group and two working memory groups: a 0-repeat-back group and 2-repeat-back group. To begin, participants were given three choices for what a given facial expression might convey before the presentation of the stimuli. The stimulus, video clips from the Interpersonal Perception Task (IPT, Archer

& Costanzo, 1988; Costanzo & Archer, 1989), was then shown for two seconds before it

disappeared. Participants were asked to choose the correct label from the choices given prior

to the stimulus presentation. Examples of the label choices included *showing affection* or

asking forgiveness. To test working memory's effect on decoding, participants in the 0-

repeat-back and 2-repeat-back groups heard letters presented through the speakers during the

decoding task. For the 0-repeat-back task, participants were asked to repeat the letters orally

and *snap* their fingers when they heard the target letter. For the 2-repeat-back task,

participants also repeated the letters orally but were asked to *snap* when they heard a letter

that was the same as the letter presented two letters previously (requiring more working

memory capacity). Phillips et al. found that participants in the working memory conditions

were significantly less accurate at decoding facial expressions than those in the control

condition, suggesting that attentional interferences can cause issues in decoding. It,

therefore, holds that working memory capacity may be an essential component of nonverbal

communication.

In support of the attentional demands of nonverbal communication, nonverbal

communication has been characterized as continuous, unlike verbal communication, which is

more discrete and overt (e.g., Kiesler, 1988; Watzlawick et al., 1967). Further, nonverbal

communication never stops within an interpersonal interaction and is constantly sent by all

members of the interaction at all times. For example, an encoder may be conversing with a

person, making conversation, but simultaneously looking bored with the conversation. The

decoder is both listening to the content of verbal information as well as considering the

implications of this nonverbal information. By contrast, verbal communication includes

pauses, and in ideal conversations, is sent by one member of the conversation at a time.

Thus, it seems reasonable that nonverbal communication requires a great deal of attention in order to detect all the nonverbal cues conveyed within an interpersonal interaction.

For example, some individuals may struggle with decoding because skill deficits become compounded by the lack of nonverbal understanding. Nowicki and Duke (1992) proposed that such individuals may continuously develop interpersonal relationships that suffer due to a lack of nonverbal understanding. Indeed, Carton, Kessler, and Pape (1999) explored this theory by having participants complete measures of psychological and relationship well-being, as well as an assessment of their decoding skills. It was found that participants who made more mistakes decoding scored significantly lower in relationship well-being and higher in depression than participants who made fewer decoding errors.

Such deficits may originate in childhood experiences with adult caregivers. Pollack, Cicchetti, Hornung, and Reed (2000) found that children who had been physically abused or neglected struggled in understanding facial expressions in comparison to control children. Children who had been physically abused showed an angry-face response bias and those who had been neglected had difficulty matching an emotional face to the correct situation. Both physically abused and neglected children displayed difficulty perceiving the differences between two facial expressions as well. This gives some support to the idea that strained or dysfunctional early interpersonal relationships relate to deficits in the acquisition of emotional understanding strategies.

Furthermore, Boyatzis and Satyaprasad (1994) suggested that the relationship between interpersonal success and decoding skills may be bidirectional. That is, individuals who lack the ability to decode nonverbal information suffer personal (e.g., loneliness, Izard et al., 2001; Nowicki & Duke, 1989) and interpersonal (e.g., relationship distress, Carton et

al., 1999) liabilities due to chronic miscommunication and misunderstanding by others. But

ironically, the creation and then maintenance of poorly functioning relationships may reduce

the likelihood of an individual making improvements or adjustments to decoding skills as

well. In other words, dysfunctional communication styles may become the typical pattern

within the relationships of poorly performing decoders (Boyatzis & Satyaprasad, 1994;

Carton et al., 1999; Halberstadt et al., 2001).

Empathy

   Conversely, in healthy, well-functioning relationships, successful decoding should

lead to an increase in understanding of the encoder's cognitive and emotional state, or

empathic responding (O'Brien, DeLongis, Pomaki, Puterman, & Zwicker, 2009). Through

empathic responding, individuals should be able to make accurate interpretations about the

sender's intentions and correctly respond to the interpersonal situation. In this way,

relationships between individuals are enhanced (O'Brien et al., 2009).

   Empathic responding has been conceptually defined into two types: trait and state

empathy. Trait empathy, or how an individual responds dispositionally in an array of

situations, comprises both cognitive empathy and affective empathy (Davis, 1983).

Cognitive empathy refers to the mental tendencies of individuals and their ability to

understand another's thoughts, whereas affective empathy refers to the emotional reactivity

of individuals to a target's situation (Davis, 1983).

   State empathy instead refers to how empathetically an individual responds when

perceiving a specific situation. Although cognitive and affective elements are involved in

both trait and state empathy, Shen (2010) proposed that state empathy also involves an

associative component. He expanded on previous work by Decety and Jackson (2006) and

Decety and Lamm (2006) on the perception-action process. By vicariously associating with the target, the perceiver begins to take on some of the emotional states the target is experiencing. For example, when watching a particularly touching movie in which an individual identifies with the actor, one may begin to cry or laugh when the actor cries or laughs. Shen (2010) defined associative empathy as the identification an individual feels with the target at the present moment. With this added component, Shen adds to the theoretical definition of empathy and explains how empathy can change across situations despite having a fairly consistent trait component.

It seems reasonable to propose that the induction of empathy across situations rests largely on a person's ability to decode a target's verbal and nonverbal information. In the case of the latter, there are a variety of cognitive and behavioral strategies that can aid in the acquisition and processing of this information.

Cognitive Decoding

Cognitive decoding requires an individual to make judgments about a target's nonverbal information (i.e., tonal cue and body language) and then to decide what those nonverbal cues mean within the current situation. It is arguable that this type of decoding is commonly achieved through perspective-taking. Perspective-taking is the active appraisal of another's actions for the purpose of understanding the individual's mental state or emotions. Davis (1983) found perspective-taking to be positively correlated with social competence, suggesting that proper perspective-taking may help to counter-act the social liabilities associated with improper decoding of nonverbal communications.

Batson, Early, and Salvarani (1997) tested two types of perspective taking strategies to determine whether either would influence empathy: imagining what the target of a story

might be feeling or experiencing (imagine-other) or imagining how an individual would

personally feel about a situation (imagine-self). After listening to a story about a student who

had recently lost her parents and was left responsible for the care of younger siblings,

participants were asked to complete measures of their emotional state and distress levels, as

well as perceptions of the student's need and feelings of empathy for her (Batson et al.,

1997). Subjects in the imagine-self-instructional set reported more empathy and distress in-

line with that of the student in the story than participants in the imagine-other condition or a

control condition asked to remain objective. This suggests that when individuals place

themselves in the position of another they are more likely to experience feelings of empathy

toward that person (Batson et al., 1997; Davis, 1983; Davis, Conklin, Smith, & Luce, 1996;

Goldstein, Vezich, & Shapiro, 2014).

The imagine-self form of perspective-taking has been empirically linked to numerous

prosocial behaviors and outcomes. For example, perspective-taking in which the observer

imagines themselves as the target serves to enable the observer to make assessments about

the cognitive processes of the target. In an experiment using eye-trackers to measure two

participant's fixations within a conversation, Keysar, Barr, Balin, and Brauner (2000) found

that participants actively spend time seeking out and fixating on the items to which their

partner is referring, presumably in order to achieve a semblance of common ground and to

increase their understanding of the target.

Because common ground or a sense of mutual understanding is one of the ultimate

goals of interpersonal communication, it is important that the decoding strategy employed by

an individual aids in this endeavor. Perspective-taking has been found to enhance

individuals' communicational experiences by making interactions more easily interpretable

(e.g., Galinsky, Ku, & Wang, 2005; Galinsky, Maddux, Gilin, & White, 2008; Neale &

Bazerman, 1983). Galinsky et al. (2005) suggested that by increasing stereotypical behaviors

or decreasing stereotypical judgments of the target, the observer can more accurately assess

how best to communicate with varying individuals. For negotiations specifically, Galinsky et

al. (2008) found that individuals who engaged in active perspective-taking were better able to

"uncover underlying interests and generate creative solutions . . . and crafted more efficient

deals with greater collective and individual gain" (p. 383), than individuals who relied solely

on empathy or who did not use any strategies.

In addition to creating more effective communications, perspective-taking can alter

the decoder's (observer) and encoder's (target) opinions of each other. Perspective-taking has

been found to reduce an observer's biased thinking (Davis et al., 1996; Duncan, 1976;

Galinsky & Moskowitz, 2000) or positively change his/her opinion (Galinsky et al., 2005;

Hodges, Clark, & Meyers, 2011) about an individual belonging to another group, usually one

that is commonly stereotyped, as well as toward that group as a whole. Galinsky and

Moskowitz (2000) found that perspective-taking was more effective than stereotype

suppression, or purposeful suppression of antisocial thoughts, in decreasing stereotypical

thoughts in addition to decreasing an individual's accessibility to such biases in future

interactions.

Further, perspective-taking increases liking for both the target (Batson et al., 1997;

Davis, 1983; Davis et al., 1996; Galinsky & Moskowitz, 2000; Maner et al., 2002) and the

observer (Goldstein, Vezich, & Shapiro, 2014). Previous research has found that when

decoders (observers) engage in perspective-taking, their liking for the encoder (target)

increases and consequently induces empathic responding, a prosocial behavior (Galinsky &

Moskowitz, 2000). Batson et al. (1997) found this to be true even when the target was responsible for his/her predicament (AIDs patient who had unprotected sex) or when the target was a convicted murderer. Additionally, Maner et al. (2002) found that liking and perspective-taking could be positively manipulated by how much the observer thought he/she was like the target, or a concept known as oneness. For example, Maner et al. told participants that their fMRI scans were either extremely similar or extremely dissimilar to that of another target's scans. Perceived oneness increased the observer's prosocial response toward the target.

Similarly, Goldstein et al. (2014) demonstrated that the target's liking for the observer can increase or decrease as a function of his/her perception of the observer's ability to successfully take the perspective of and empathize with the target. This phenomenon is accompanied by the same benefits for the observer as the target. That is, the target who feels understood generally behaves more prosocially towards the observer.

In summary, cognitive decoding, or perspective-taking, facilitates interpersonal communications by allowing the observer to gain information about the target's thoughts or actions. This addition of information has been found to increase an observer's empathic responding towards a target (e.g., Batson et al., 1997). Further, perspective-taking has been linked to increased prosocial behavior and liking for both the observer toward the target and the target toward the observer (e.g., Goldstein et al., 2014). Taken together, it appears that proper perspective-taking may offset the negative effects of improper decoding.

Physical Decoding

While there is an abundance of research defining perspective-taking as a reliable method of understanding social situations, as well as another's emotions and cognitive

processes (e.g., Batson, Early, et al., 1997; Batson, Polycarpou, et al., 1997; Davis et al., 1996; Galinsky & Moskowitz, 2000; Keysar et al., 2000; Maner et al., 2002), physical decoding of nonverbal information, or mimicry, has been less researched and is the topic of much debate.

Physical decoding consists of bodily and facial mimicry of the target that serves to help the decoder understand and enhance the interpersonal experience. For example, in meeting a person for the first time, individuals may rely on the other person to dictate how the interaction will proceed. This can be done through mimicry. Consider a situation in which one person meets another for the first time. If one of the two excitedly exclaims, smiles, and puts his/her arms out for an embrace, it might be deemed socially risky for the second person not to mimic those nonverbal cues and reciprocate the emotional tone. In the same way, if the first person approaches the situation in a more stoic and less approachable manner, the second might create a feeling of unease in the situation if he/she responds too affably or enthusiastically. By correctly mimicking another's nonverbal cues, individuals are able to make assessments about and respond to another's cognitive and emotional states in a way that enhances the interaction. Physical mimicry can include speech patterns (Neumann & Strack, 2000), bodily placements (Chartrand & Bargh, 1999), as well as facial expressions (Dimberg, 1982).

Of the various forms of nonverbal communication, individuals are most conscious of theirs and other's facial expressions (Noller, 1985; Zuckerman, DePaulo, & Rosenthal, 1986) and often attend to this information more than verbal communication (Friedman, 1978). In addition, the information found in facial expressions appears to hold more weight for the decoder than verbal information, particularly when the two present conflicting information

(Mehrabian & Ferris, 1967). Previous research has specifically implicated facial mimicry as

one of the key components in this emotion recognition (e.g., Dimberg, Thunberg, &

Elmehed, 2000; Ponari, Conson, D'Amico, Grossi, & Trojano, 2012; Wallbott, 1991).

One important function of facial mimicry is that it allows individuals to detect

changes in another's facial expression. This skill is critical to interpersonal interactions

because it serves to inform an individual if he/she is offending, boring, confusing, or

entertaining his/her partner. To demonstrate mimicry's role in change detection, Niedenthal,

Brauer, Halberstadt, and Innes-Ker (2001) manipulated participants' ability to mimic facial

expressions. Participants were divided into two groups, mimicry and blocked mimicry.

Mimicry blocking was achieved by instructing the participants to hold a pen between their

teeth (as developed by Strack, Martin, & Stepper, 1988). Participants were shown a stimulus

that consisted of multiple pictures of a female's face that progressively changed to neutral (to

test recognition of the off-set of emotion) or to another, incongruent emotional expression (to

test recognition of the on-set of emotion). Niedenthal et al. (2001) found that individuals

whose ability to mimic facial reactions was not blocked were significantly more able to

detect the off-set and on-set of a target's facial expressions than individuals whose

mimicking was inhibited.

This finding suggests that individuals who are prevented from mimicking other's

reactions may have difficulty detecting changes in his/her target's demeanor. However,

because the deficit likely occurs out of their conscious awareness, individuals may miss the

opportunity to correct the behavior at the time of offense (Niedenthal et al., 2001). This

inability to detect and correct offenses may be one factor fueling the theory proposed by

Nowicki and Duke (1992) that individuals suffer interpersonally from an inability to understand nonverbal behaviors of others.

Another critical and thoroughly debated function of facial mimicry is to help individuals assess another's current emotional state. By mimicking a target's facial expressions one can employ facial feedback to make a decision about the target's nonverbal facial cues. The facial feedback hypothesis suggests that individuals understand their own emotional states as a function of their personal facial expressions (Adelmann & Zajonc, 1989; Darwin, 1872; Hess, Kappas, McHugo, Lanzetta, & Kleck, 1992; James, 1884; McIntosh, 1996), i.e., "If I am smiling, then I must be happy."

The facial feedback hypothesis has been expanded to include one's understanding of another's emotional state as well. The embodied cognition theory (Niedenthal, 2007), also known as reverse simulation theory (Goldman, 2006; Goldman & Siripada, 2005), proposes that individuals understand the emotions of others by first experiencing those emotions themselves through simulation, replication, or reproduction (Goldman & Siripada) and then by inferring the target's emotional state based on personal experience. For example, Wicker et al. (2003) found that the regions in an observer's insula that are activated when he/she personally experiences a stimulus that induces disgust are also activated when that observer watches another individual experience the same stimulus. Niedenthal (2007) and Wicker et al. (2003) proposed that in order for an observer to recognize an emotion, he/she must first experience it for him or herself. Theoretically, once the target's facial expression has been mimicked, the decoder can determine the other's emotional state by making judgments about what the mimicked expressions mean for him/her, i.e., "If he/she is smiling, and I am happy when I smile, then he/she must be happy." In the same way, when an individual's ability to

mimic is inhibited, he/she is less likely to be able to recognize emotions of another

(Oberman, Winkielman, & Ramachandran, 2007).

To test this reverse simulation of embodied cognition theory, Blairy, Herrera, and

Hess (1999) tested shared affect between observer and target as well as emotion recognition.

In congruence with previous emotion recognition research, participants were instructed to

either mimic the facial expressions of the target or to not do so. Contrary to the theory's

predictions, no correlation was found between facial mimicry and shared affect or for shared

affect and emotion recognition. One possible explanation for the study's lack of support for

the theory is that targets for emotion recognition were static pictures of strangers' faces, and

not necessarily as goal-inducing as would be an actual person-to-person interaction. Previous

research has suggested that actively involved observers (with active targets) may be more

motivated to reach an understanding with the target than passively involved observers (Chen,

Yates, & McGinnies, 1988). Still, participants in the observer role reported finding facial

decoding easier when using mimicry as a strategy (Blairy et al., 1999).

Further, there is some research to suggest that while mimicry might be helpful for

emotion recognition, it is not necessary for the inducement of it (Blairy et al., 1999; Bogart &

Matsumoto, 2010). For example, Bogart and Matsumoto compared individuals with Moebius

syndrome (a syndrome which leaves individuals with full or nearly full facial paralysis)

versus those without the syndrome on judgments of emotional facial expressions. No

difference was found in recognition accuracy between individuals with Moebius syndrome

and the control group, despite the fact that those with the facial paralysis could not mimic the

target. The authors argued that this demonstrated evidence that reverse simulation through

mimicry was not a necessary component for emotion recognition.

Despite the debate about how facial mimicry works, researchers do agree on the interpersonal benefits of facial mimicry and its similarity to perspective-taking in regards to emotional outcomes such as better understanding of the target, and higher prosocial behavior (Ashton-James, van Baaren, Chartrand, Decety, & Karremans, 2007; Chartrand & Bargh, 1999; Guéguen, 2011; Hess & Fisher, 2013). Mimicking has benefits for the mimicker as well. Individuals who have been mimicked are more likely to engage in helpful behaviors (assisting someone who has dropped pens) and individuals who have participated in mimicking are more likely to donate money to charity (van Baaren, Holland, Kawakami, & van Knippenberg, 2004). In a naturalistic setting testing the benefits of mimicking, waitresses who were instructed to mimic their customers received larger tips than waitresses who did not (van Baaren, Holland, Steenaert, & van Knippenberg, 2004).

Mimicry may enhance these positive social outcomes because it has also been shown to increase a target's feelings of similarity with the mimicker (van Baaren, Janssen, Chartrand, & Dijksterhuis, 2009). This suggests a connection between mimicry and empathy. Indeed, Sonnby-Borgström (2002) tested the relationship between the two by comparing decoders' mimetic responses, recreating the facial movements of the target, against high and low empathetic individuals, measured by the Questionnaire Measure of Emotional Empathy (QMEE, Mehrabian & Epstein, 1972). Facial mimicry was tested by measuring mimetic responses to pictures of facial emotions (Ekman & Friesen, 1975) using electromyography (EMG). Sonnby-Borgström found that individuals who scored higher on the measure of empathetic responding showed significantly higher mimetic facial responding to the target than those who scored lower on the measure of empathic responding. Such findings are consistent with demonstrations that blocking mimicry compromises individuals' ability to

recognize emotions (Chartrand & Bargh, 1999; Niedenthal, 2007; Niedenthal et al., 2001;

Oberman et al., 2007; Strack et al., 1988), particularly for situations in which both

participants are seeking to reach common ground in understanding one another.

However, mimicry can be less reliable when common ground is not the goal of an

interaction. For example, Stel, van Dijk, and Olivier (2009) found that when the target's

intention was to deceive the encoder, the use of mimicry by the observer was counter-

productive and yielded inaccuracy in predicting deception. By displaying another's

misrepresented emotions, the decoder is arguably mimicking (and perhaps taking on)

emotions that are purposefully misleading and therefore, unhelpful in understanding the true

intentions of the target.

In summary, physical decoding, or facial mimicry, facilitates interpersonal

communications by aiding the observer in assessments about what the target's facial

expressions might mean. With this understanding, an observer is better able to respond to the

target in a context-appropriate way. This responding has been found to increase an observer's

prosocial behaviors (e.g., Ashton-James et al., 2007). Likewise, facial mimicry enhances the

target's opinions of the observer as a consequence of feeling better understood (e.g., van

Baaren et al., 2009) and increase his/her liking for the observer as a result of being mimicked

(van Baaren, Holland, Steenaert, et al., 2004). Taken together, it appears that, like

perspective-taking, facial mimicry, when executed properly, enhances interpersonal

interactions and may also off-set some of the negative liabilities associated with poor

decoding.

The Current Study

The desire for congruence with the emotional experience of another appears to be a shared aspect of both cognitive (perspective-taking) and physiological (mimicry) decoding strategies. Both have been linked to empathy, and liking (Batson et al., 1997; Davis, 1983; Guéguen, 2011; Hess & Fisher, 2013; Sonnby-Borgström, 2002), but perspective-taking has received more attention in making this empirical connection.

Minimal research, if any, has attempted to test mimicry as a method of decoding nonverbal communication with a goal other than that of emotional recognition and contagion. The first aim of the present study was to examine whether instructions aimed at increasing one's understanding of a target (perspective-taking and facial mimicry) would successfully increase empathic responding.

Secondly, to my knowledge, no study has compared different decoding strategies by which empathy towards a target could be achieved: perspective-taking (cognitive) or mimicry (physical). While both have been shown to have positive relational benefits, it is unclear whether one proposed decoding strategy is superior in achieving an observer's understanding of a target's emotional state. For this reason, the second aim of the present study was to assess the differences in understanding, or state empathy, and liking that both strategies elicit.

Additionally, it has been suggested that the prosocial benefits of perspective-taking occur as a result of self-other overlap, or an "overlap between mental representations of the self and mental representations of the other" (Galinsky et al., 2005, p. 110) as a means of self-expansion (Aron, Lewandowski, Mashek, and Aron, 2013). According to Galinsky et al. this desire for greater self-knowledge and growth corresponds with the innate need to belong.

This fundamental need is met by engaging in successful and fulfilling interpersonal interactions. Successful interactions with others require this expansion, or self-other overlap, in order to facilitate social coordination, allowing the communication to be more easily understood by both parties (Aron, Aron, & Smolla , 1992; Galinsky, Wang, & Ku, 2008; Goldstein et al., 2014). While Galinsky et al. proposed that perspective-taking helped to achieve self-other overlap, mimicry was not directly assessed in their study. The third aim of the present study was to assess measures of self-other overlap for facial mimicry in order to better understand the processes guiding the relational benefits of mimicry.

Active decoding instructions were given to female participants prior to viewing to an interview with a same-sex individual who hurt a friend through lying and is expressing regret for the action via an apology. Based on the literature, an apology creates forgiveness by means of empathy (Cochran, 2014; Davis & Gold, 2011; McCullough, Worthington, & Rachal, 1997). Thus, to examine whether empathy is enhanced via such decoding instructions, participants were randomly assigned to one of three conditions that involve perspective-taking (imagining oneself as the target; Batson, Early, et al., 1997), facial mimicry (imitating the target's facial expressions; Stel, van Baaren, & Vonk, 2008), or remaining objective while evaluating the target in the interview (control condition). Empathic responding was assessed via a measure of state empathy, liking, and self-other overlap, as well as a measure of willingness to forgive the target.

The infraction was deemed more consistent with the nature of female than male friendships, and thus, only female participants were used for the study. The event described involved the target lying to a friend about planning a social gathering with a new group of friends. The target reported that the lie was told so that an *old* friend would not feel

excluded, despite the desire to attend the gathering without her. Female friendships are
characterized as emphasizing intimacy and security relative to males' more functional
relationships (Vigil, 2007). That is, because women have been shown to be more exclusive
in their interpersonal relationships, feelings of betrayal as a result of interpersonal conflict
may be more relatable for females than males. Further, a female-female dyadic relationship
was chosen because women have been shown to be both more expressive in their emotions
(King & Emmons, 1990) and better emotional decoders (Hall, 1978; Rosenthal, Hall,
DiMatteo, Rogers, & Archer, 1979) than men.

Design Overview and Hypotheses

The study utilized a one-way design across levels of decoding type (perspective
taking vs. mimicry vs. control) with state empathy, liking, self-other overlap, and inclusion of
other in self as the main dependent variables. A two versus one *a priori* planned contrast was
expected to show that both of the decoding strategies, perspective-taking and facial mimicry,
led to greater empathic responding toward the target than the control condition. Specifically,
individuals instructed in these two strategies were expected to report more state empathy,
liking, and a greater degree of similarity between the self and the target than no-instruction
control participants. No differences were predicted between the two experimental groups
given that, to my knowledge, mimicry has yet to be explored in this paradigm.

As an exploratory analysis, participants' evaluations of anticipated forgiveness were
assessed across levels of decoding strategies. Given that these decoding strategies have been
empirically linked to empathy (Batson, Polycarpou, et al., 1997; Sonnby-Borgström, 2002)
and that an apology aids in the process of forgiveness by means of empathy (Cochran, 2014;

Davis & Gold, 2011; McCullough et al., 1997), it was proposed that these decoding strategies should lead to forgiveness through empathy.

Method

Participants

A total of 95 female participants ($M = 19.34$, $SD = 1.47$) were recruited through an online subject pool from a Southeastern University in the United States and received course credit for their participation. A statistical power analysis using G*Power (Buchner, Erdfelder, Faul, & Lang, 2009) indicated that a sample of at least 52 participants would be required to detect the relationship found in previous research [$F(1,186) = 9.45$ $p = .002$; Goldstein et al., 2014]. This study was approved by the Institutional Review Board on December 5, 2014 (see Appendix A and B).

Materials

Interpersonal Infraction Story. Aspects of the story manipulation were modeled after Takaku's (2001) experiment on forgiveness due to its use of an actively engaging and goal-oriented stimulus. That is, participants were required to engage in the story and make decisions about whether or not they would forgive the target. Previous research has found that when participants are less engaged, or do not have a goal in mind when listening to the stimulus information, the effect of the interpersonal decoding strategy is weakened (Chen et al., 1988).

A video recording of a female target named Jessica was created describing a situation in which she wronged a friend and apologized. The video was made to look like a self-disclosed video posted to YouTube to make the stimulus seem as legitimate as possible. The video was scripted as follows:

A couple of months ago I began hanging out with a new group of friends that I met through a class group project. They invited me to go out to eat with them at Chili's one Friday night and then over to someone's house to watch a movie. I accepted. A couple of hours after I made plans with those friends in class you asked me what I was doing this Friday. I felt awkward about inviting you to go along with us. I don't know why. I guess I wasn't sure how well you'd get along with this new group so it seemed easier to lie about it. I told you that I had a big project due on Monday that I had to work on and could we plan on doing something the next weekend. When my friends and I got to Chili's, I saw you in the restaurant. I knew that you saw me and that you were upset with me. I stopped to say hi but before I could say anything you asked me 'I thought you had a project to work on?' Then you and Stephanie got up and walked out of Chili's. I felt terrible. [Pause to look down] I went outside to talk to you but you were gone. I am very sorry. I know I have hurt you and I didn't mean to. I should have told you the truth. I didn't want to tell you I had plans that you weren't necessarily invited to. Please forgive me.

Decoding Strategy Instructions. Three different instructional sets were created for the study. Instructions for strategies were adopted from previous experiments in which each instructional set was found to be effective.

Perspective-taking. In order to engage participants in cognitive decoding, those in the perspective-taking condition were instructed to imagine they are the target of the story who committed the betrayal. These instructions were modified from Batson et al. (1997)'s "imagine-self" condition. The instructions read as follows:

>While you are watching the following video, try to imagine how you yourself
>
>would feel if you were experiencing what has happened to Jessica, who lied to
>
>her best friend and how this experience would affect your life. Try not to
>
>concern yourself with attending to all the information presented. Just
>
>concentrate on trying to imagine how you yourself would feel.

Mimicry. In order to engage participants in physical decoding, those in the mimicry

condition were explicitly instructed to mimic the facial expressions of the target while

watching the video. Voluntary mimicry has been previously manipulated (Stel et al., 2009),

and these instructions will be used in the current study to instruct participants on how to

mimic. The instructions read as follows:

>While you are watching the following video, please pay particular attention to the
>
>eyes, eyebrows, and mouth of the target, Jessica. Then actively try to recreate those
>
>movements with your own face. That is, try to mirror the facial movements of Jessica.

Control condition. The instructional set for the control condition asked participants to

remain objective in their assessments about the target. The instructions were modified from

those of Stel et al. (2009) who instructed participants not to mimic the target. The

instructions read as follows:

>While you are watching the following video, please pay particular attention to the
>
>eyes, eyebrows, and mouth of the target, Jessica. To the best of your ability, DO NOT
>
>recreate these movements with your face, only observe Jessica as she tells her story.
>
>In addition, please try to remain objective and not take a side when listening to
>
>Jessica's interview.

Measures

Interpersonal Reactivity Index. The Interpersonal Reactivity Index (IRI; Davis, 1980) measures trait empathy. The IRI consists of 28 questions, measured on a 5-point Likert scale (1 = does not describe me well; 5 = describes me very well). Within the 28 questions, there are four subcategories, with seven questions each relating to four different global concepts of empathy (e.g., [1] fantasy: "I really get involved with the feelings of the characters in a novel," [2] perspective-taking: "I try to look at everybody's side of a disagreement before I make a decision," [3] empathic concern: "I am often quite touched by things that I see happen," [4] personal distress: "I tend to lose control during emergencies"). The test-retest reliability for this scale ranges from .61 to .79 for males, and .62 to .81 for females (Davis, 1980). The Cronbach's alpha for this sample's overall test was found to be .75. Filler items were added as a precaution against priming for the perspective-taking condition due to the IRI for which there is a subscale measuring perspective-taking. Questions relating to mimicry were matched to the amount of questions relating to perspective-taking (e.g., "I sometimes find myself mimicking the body postures of my friends."). In addition, 21 other questions were be added to the scale to distract from the purpose of the experiment. A total of 56 questions were asked (See Appendix C). Items were scored using an overall mean and mean scores could range between 1 and 5 (See Konrath, O'Brien, & Hsing, 2011 for a similar comparison), with higher scores indicating greater trait empathy.

State Empathy Scale. The state empathy scale measures both cognitive and affective empathic responses as well as associative responses (Shen, 2010), and consists of 12 questions measured on a 5-point Likert scale (0 = not at all, 4 = completely). The scale includes four questions relating to each of the three types of empathy (e.g., [1] cognitive

empathy: "I recognize Jessica's situation, [2] affective empathy: "I experienced the same

emotions as Jessica when watching the video," [3] associative empathy: "I can identify with

the situation described in the video"). Some words were altered in order to be more relevant

to the current study (i.e., *character* was substituted with *Jessica*). The test-retest reliability of

this scale was reported at .92 (Shen, 2010). The Cronbach's Alpha for this sample was .92.

The inter-item reliability for the subscales were as follows: cognitive empathy was .88,

affective empathy was .84, and associative empathy was .84 (see Appendix D), with higher

scores indicating greater state empathy.

Self-other Overlap. Self-other Overlap Scale assesses the extent to which a

participant has identified with the target. It consists of eight questions that measure the

subject's perceived similarity with the target (Goldstein et al., 2014), and the ninth question

is the Inclusion of Other in the Self Scale (IOS; Aron et al., 1992). The first eight questions

are measured on a 7-point Likert scale (1 = not at all, 7 = very much) (e.g., "To what extent

do you feel you are similar to Jessica?") (See Appendix E). The Cronbach's alpha was .95 for

the current study. The ninth question presents seven Venn diagrams with varying degrees of

overlap (1 = two non-overlapping circles, 7 = two nearly completely overlapping circles).

The test-retest reliability of this scale was reported as .83 (Aron et al., 1992) (see Appendix

F).

Liking. One item was used to assess participants' liking of the target (e.g., "How

much do you like Jessica?"). This scale consists of one statement measured on a 7-point

Likert scale (1 = not at all; 7 = very much). This method has successfully been used in prior

research. (Goldstein et al., 2014; Stel, Rispens, Leliveld, & Lokhorst, 2011) (see Appendix

G).

Forgiveness Scale. The Forgiveness Scale (Rye et al., 2001 consists of 14 statements measured on a 5-point Likert scale (1 = strongly agree, 5 = strongly disagree) in which higher scores indicate an increase in forgiveness (e.g., "I would feel resentful toward the person who wronged me," "I would be able to let go of my anger toward the person who wronged me"). Items will be summed to form an aggregate. The test-retest reliability for this scale was reported at .80 (Rye et al., 2001). Cronbach's alpha for the current study was .58 (see Appendix H).

Other Measures. Additional items were included for exploratory purposes. The following three questions were included to examine individual's prior experience with the scenario using a 7-point Likert scale (1 = never, 7 = frequently): [1] "Have you ever been in a situation similar to the one described by Jessica?"; [2] "Has a close friend ever been dishonest with you?"; [3] "Have you ever been dishonest with a close friend?" Demographic information, such as age, was also assessed (see Appendix I).

Manipulation Check. To ensure that participants followed the instructional sets for decoding, they were asked to choose one response from a list regarding what action they completed during the study (e.g., "I took the perspective of Jessica."). In addition, participants were asked whether or not they know the actor in the stimulus video personally ("yes" or "no"). Participants who recognized the actor might then have known that the video was not a legitimate YouTube video and may not have been as honest and forthcoming with personal information. Therefore, data of participants who respond with "yes" was discarded (see Appendix J).

Procedure

Participants were run in groups. Upon arrival to the lab, participants were asked to take a seat at a computer station. Each station was equipped with headphones and blocked from the view of the other stations with dividers to allow the participants privacy when evaluating the video. After choosing a seat, the participants were asked to read and respond to the consent form on the computer. Participants were told that the study would be examining how people form first impressions of others. Then, the participants, having been randomly assigned into one of the three groups through the survey software, were asked to follow the link on the screen that took them to the experiment. To begin, participants completed a demographic survey, then a measure of trait empathy (Interpersonal Reactivity Scale). This was followed by a distractor task (YouTube video of animals) in order to decrease priming effects of the trait empathy measure. During the video, participants were asked to count how many animals they see during the video. Then, participants were asked to read through the instructions (perspective-taking, facial mimicry, or control) and watch the target video presentation. Immediately after the video presentation, participants were asked to complete the following questionnaires: State Empathy Scale, Self-Other Overlap, Liking, Forgiveness, and the manipulation check. Upon completion, a message appeared asking the participant to sit quietly and wait for the other participants to finish. This allowed all participants privacy during the experiment, as well as reduced distraction. Participants were then debriefed and thanked for their participation.

Results

Manipulation Check

Participants completed a manipulation check question at the end of the survey asking that they identify the instructions they followed during the stimulus presentation (e.g., "I tried

to take the perspective of Jessica."). Unfortunately, 58 out of 95 of the participants failed to

report correctly which instructional set they had utilized. Thirty-six percent ($n = 12$) of the

perspective-taking condition, 41% ($n = 14$) of the mimicry condition, and 39% ($n = 11$) of

the control condition correctly identified the instructional sets they had been given. Given the

ambiguity of this outcome (uncertainty whether this item was worded poorly versus reflected

differences in participants' adherence to the instructions), two different samples were created

to test the proposed hypotheses.

The first sample included all 95 female participants between the ages of 18 and 26 (M

$= 19.34$, $SD = 1.47$), who participated in the experiment, regardless of whether or not they

answered the manipulation check correctly (Sample 1). The second sample included 37

female participants between the ages of 18 and 24 ($M = 19.49$, $SD = 1.54$) and included only

those participants who answered the manipulation check correctly (Sample 2). This was done

to explore whether participants who stated accurate instructional sets exhibited the expected

differences in empathy and prosocial outcome measures relative to their experimental groups.

See Table 1 for descriptive data for each sample.

Sample 1

Instructional Sets and Prosocial Outcomes. To test the primary hypotheses, four, 2

(perspective-taking and mimicry) versus 1 (control) planned contrast ANOVAs were

conducted to compare the two decoding strategies against the control group on measures of

state empathy, liking, self-other overlap, and inclusion of other in self.

State Empathy. Contrary to prediction, the 2 (perspective-taking and mimicry) vs. 1

(control) *a priori* planned comparison indicated no significant difference in participant's state

empathy in the perspective-taking ($M = 3.37$, $SD = .88$) and mimicry conditions ($M = 3.10$,

$SD = .80$) versus the control condition ($M = 2.97$, $SD = .70$), $t(92) = 1.49$, $p = .139$, $d = .16$.

To explore further the impact of decoding instructions on state empathy, additional analyses were conducted. Since some of these analyses were exploratory in nature, a Bonferroni's correction formula, set at $p = .008$, was used to reduce the rate of family-wise error (Field, 2013).

As Table 2 shows, the Interpersonal Reactivity Index (IRI) (Davis, 1980) measuring trait empathy, was positively correlated with state empathy, $r(93) = .40$, $p < .001$. Thus, the decision was made to include it in the analyses as a covariate for a one-way ANCOVA across decoding conditions (perspective-taking, mimicry, and control). This analysis showed that the covariate was significant in the model, $F(1, 92) = 18.51$, $p < .001$, *partial* $\eta^2 = .17$. However, there was not a significant effect of condition on overall state empathy, $F(2, 92) = 2.60$, $p = .080$, *partial* $\eta^2 = .06$.

Further, because Shen's state empathy scale comprises three subscales (affective, cognitive, and associative empathy), an exploratory MANCOVA was used to assess differences across conditions (perspective-taking, mimicry, and control) with subscales specified as the dependent variables and trait empathy as the covariate. Results demonstrated a non-significant multivariate effect of condition on the state empathy subscales, $\Lambda = .865$, $F(6, 176) = .865$, $p = .044$, *partial* $\eta^2 = .07$, when controlling for trait empathy ($p = .044$ did not achieve the established criterion based on the Bonferroni correction mentioned above).

Liking. Participants' reports of how much they liked the target were submitted to the 2 (perspective-taking and mimicry) vs. 1 (control) *a priori* comparison as well. No significant difference emerged in participant's liking of the target across the perspective-

taking ($M = 4.18$, $SD = 1.19$) and mimicry conditions ($M = 4.21$, $SD = 1.18$) relative to the control condition ($M = 4.25$, $SD = 1.08$), $t(92) = -.217$, $p = .829$, $d = .02$.

Because the IRI also correlated with this measure, $r(95) = .35$, $p = .001$ (See Table 2), it was, again, included in the analysis as a covariate. A one-way ANCOVA across conditions (perspective-taking, mimicry, and control) demonstrated no significant difference on reports of liking, $F(2, 92) = .06$, $p = .946$. However, trait empathy was a significant covariate in the analysis, $F(1, 92) = 12.64$, $p = .001$, *partial* $\eta^2 = .12$.

Self-Other Overlap. Self-other overlap, as defined by Goldstein et al. (2014), involves a summed score across questionnaire items and a one-item measure of Inclusion of Other in the Self Scale (IOS) (Aron et al., 1992). For the questionnaire, a 2 (perspective-taking and mimicry) vs. 1 (control) *a priori* planned comparison indicated no significant difference in participant's scores in the perspective-taking ($M = 2.55$, $SD = .10$) and mimicry conditions ($M = 2.60$, $SD = .88$) versus the control condition ($M = 2.44$, $SD = .89$), $t(92) = .63$, $p = .53$, $d = .07$. For the IOS, a 2 (perspective-taking and mimicry) vs. 1 (control) *a priori* planned comparison again found no significant difference in participant's reported inclusion of the target in the perspective-taking ($M = 2.75$, $SD = 1.32$) and mimicry conditions ($M = 3.26$, $SD = 1.52$) relative to the control condition ($M = 2.75$, $SD = 1.24$), $t(92) = .80$, $p = .43$, $d = .08$.

Due to the IRI's significant relationship to both reports of self-other overlap for the questionnaire for the one-item measure (see Table 2), two ANCOVAs performed across conditions (perspective-taking, mimicry, and control) including IRI as a covariate, were conducted. For both analyses, trait empathy was found to be a significant covariate, $F[1, 92] = 22.38$, $p < .000$, *partial* $\eta^2 = .20$, for the summed measure, and $F[1, 92] = 15.98$, $p < .001$,

partial $\eta^2 =$ .20, for the one-item IOS measure. Contrary to predictions, condition did not

influence reports of self-other overlap, $F(2, 92) = .23, p = .80,$ *partial* $\eta^2 = .01$ or reports of

inclusion of other in the self, $F(2, 92) = 1.49, p = .23,$ *partial* $\eta^2 = .03.$

      Exploratory Analyses with Forgiveness. To explore the instructional sets' effect on

forgiveness, a one-way ANOVA across three conditions (perspective-taking, mimicry, and

control) was conducted. Results found that there was not an overall effect of condition on

forgiveness, $F(2, 92) = .127, p = .881,$ *partial* $\eta^2 = .003.$

      As shown in Table 2, trait empathy and forgiveness were found to be correlated

($r[93] = .21, p = .043$) and therefore, trait empathy was once again used as a covariate in a

one-way ANCOVA across conditions. The covariate, trait empathy, was not significantly

related to the participant's forgiveness, $F(1, 92) = 4.09, p = .046,$ *partial* $\eta^2 = .04,$ and, there

was not a significant effect of condition on forgiveness $F(2, 92) = .051, p = .951,$ *partial* $\eta^2 =$

.001.

Sample 2

      Instructional Sets and Prosocial Outcomes. The second sample included only those

participants who correctly identified the decoding instructions to which they were assigned

during the stimulus presentation. Again, to test the primary hypotheses, four, 2 (perspective-

taking and mimicry) versus 1 (control) planned contrast ANOVAs were conducted to

compare the two decoding strategies against the control group on the dependent measures.

The analyses for Sample two were modeled after the analyses for Sample one.

      State Empathy. As shown in Table 4, the 2 (perspective-taking and mimicry) vs. 1

(control) *a priori* planned comparison indicated a significant difference in participant's state

empathy in the perspective taking and mimicry conditions versus the control condition. As

predicted, the two decoding conditions reported higher state empathy than the control condition. Again, to further explore the instructional sets effect on state empathy, additional analyses were conducted and the same Bonferroni's correction ($p = .008$) was used to reduce the rate of family-wise error as in Sample 1 (Field, 2013).

The IRI was again significantly correlated with state empathy and for this reason was used a covariate for a one-way ANCOVA across conditions (see Table 3). Table 4 shows a significant main effect across conditions. Follow-up pairwise comparisons indicated that those who engaged in perspective-taking were significantly higher than those who engaged in both mimicry ($p = .008$) or the control instructional set ($p = .001$), on reports of state empathy.

As with Sample 1, a MANCOVA was used to assess differences amongst the subscales of state empathy (affective, cognitive, and associative) across conditions (perspective-taking, mimicry, and control) with the subscales as the dependent variables and the IRI as a covariate. Again, the results demonstrated a non-significant multivariate effect of condition on the subscales, $\Lambda = .65$, $F(6, 62) = .2.49$, $p = .033$, *partial $\eta^2 = .193$*, ($p = .033$ is insignificant due to the Bonferroni's correction).

Liking. A 2 (perspective-taking and mimicry) vs. 1 (control) *a priori* comparison again found no significant differences in participants' liking of the target across the perspective-taking and mimicry conditions in comparison to the control condition (see Table 4). A one-way ANCOVA across conditions (perspective-taking, mimicry, and control) using trait empathy as covariate did not find significant differences in liking across conditions (see Table 5).

Self-Other Overlap. Unlike Sample 1, the questionnaire portion of the Self-Other Overlap, a 2 (perspective-taking and mimicry) vs. 1 (control) *a priori* planned comparison supported the prediction that individuals who were in the two decoding conditions reported higher self-other overlap than those in the control condition (see Table 4). Similarly, the 2 (perspective-taking and mimicry) vs. 1 (control) *a priori* planned comparison for the one-item measure of portion of self-other scale (Inclusion of Other in Self) indicated a significant difference in which the participants who were in the two decoding conditions report higher inclusion of other in the self. However, the exploratory ANCOVA across conditions including the IRI as a covariate did not show a significant effect of the covariate nor of condition across groups for either measure of self-other overlap (see Table 5).

Exploratory Analysis with Forgiveness. Finally, a one-way ANOVA across conditions (perspective-taking, mimicry, and control) found that there was not an overall effect of instructional set on forgiveness, $F(2, 34) = .34$, $p = .715$, *partial η^2* $= .002$.

Discussion

Prior research has established both perspective-taking and mimicry as viable strategies for decoding interpersonal communication and increasing empathy and prosocial outcomes such as liking (Ashton-Johnson et al., 2007; Batson, Early, et al., 1997). However, no study to my knowledge has compared whether one might be more impactful in inducing enhanced understanding of another. The current study sought to bring together these two lines of research by examining whether individuals instructed to use either strategy would experience more empathy and positive regard for a target who committed an interpersonal betrayal. Specifically, female participants were given decoding instructions (perspective-taking, mimicry, or a control condition) and then asked to engage in these behaviors while

watching a target describe an event that involved deception toward a friend. It was

hypothesized that these instructions would lead to higher empathic understanding of that

target relative to instructions that did not include active decoding.

When only those participants who reported accurately following the instructional sets

were examined, the hypotheses were primarily supported. That is, the results aligned with the

predictions (and the findings of previous research) that instructions to partake in specific

behaviors while listening to an interpersonal account involving a same-sex target would

increase interpersonal understanding via state empathy and other-oriented cognitions (e.g.,

Ashton-James et al., 2007; Batson, Early, et al., 1997, Galinsky et al., 2005, Goldstein et al.,

2014). In the current study, prompting participants to engage in an instructional decoding

strategy, be it physical (mimicry) or cognitive (perspective-taking), showed beneficial

outcomes with regard to empathic responsiveness to the target. This suggests that individuals

may use multiple strategies to make interpersonal connections with others, which can include

cognitive elements as well as bodily actions. Such tactics may aid in the interpretation and

simulation of the emotions of others (e.g., see Niedenthal, 2007; Wicker et al., 2003).

Evidence of the benefits of active decoding strategies extended beyond reported

empathy and included perceiving greater overlap between the self and the target. According

to self-expansion theory (Aron, Lewandowski, Mashek, & Aron, 2013), humans are

motivated to experience new perspectives in order to acquire self-growth through

incorporating others' "perspective and identities" (p. 91). According to Galinsky et al.

(2005), this expansion of self, or self-other overlap, is gained through cognitive appraisal of

the target's anticipated motivations that leads to social coordination and enhanced relational

bonds. The current study found evidence for Galinksy et al.'s model for more overt cognitive

perspective taking, but also suggests that conscious nonverbal mimicry might facilitate ways

of expanding the self to experience new perspectives of a given situation. Specifically, the

use of both decoding strategies increased participants' report of self-other overlap and

inclusion of other in the self. Alternative forms of decoding such as facial mimicry, thus, may

be means of achieving understanding of another in tandem with cognitive processes like

active perspective taking.

    However, it is important to note that cognitive decoding instructions of imagining the

target's perspective for the event exacted a greater benefit on reported empathy than

instructing participants to mimic the target's facial expressions. One reason that this might

have occurred is that the mimicry instructions may have been more awkward and unnatural

than the perspective-taking instructions, and induced too much self-awareness about a

behavior that is somewhat reflexive and automatic. For example, Meltzoff and Moore (1977)

found that infants begin to imitate facial expressions starting as young as 12 days old. The

intrinsic nature of mimicry, however, may suffer when an individual is made to think more

overtly about it. Schneider (2008) found that individuals who were instructed to mimic a

target's facial expressions found the behavior to be difficult and effortful, suggesting that

perhaps there is a cognitive load associated with consciously mimicking facial expressions.

Following the instructions to take the target's perspective may simply have been less difficult

for the participants, and the instructions to mimic, more artificial and forced if such actions

generally occur less mindfully.

    In addition, perspective-taking might be more common in terms of popular wisdom

and familiarity with gaining insight into another person. Phrases such as "imagine the

situation from their point-of-view," or "walk a mile in his/her shoes" are common colloquial

expressions. By contrast, mimicking another person may feel as though one is mocking that person, especially if instructed to do so overtly. Further, the control group was explicitly told to pay attention to the facial movements of the target but to *not* try to recreate those movements (Stel et al., 2009). This could have been awkward and distracting for the participants.

Interestingly, even though individuals who engaged in either physical or cognitive decoding while listening to the target experienced more self-reported empathy for the target and self-other overlap, subsequent forgiveness of the event was not increased. According to previous research, perspective-taking should increase forgiveness via empathy (Cochran, 2014; Davis & Gold, 2011; McCullough et al., 1997). The current study sought to expand this to mimicry as well, through the use of an event involving interpersonal betrayal. However, evidence for this relationship was not found. One main difference between the current investigation and others, was the nature of the infraction reported in the manipulation. Takaku (2001) had participants read about an infraction in which a student misplaced another's notes in order to illicit participant responses. Participants in this study heard a taped account of a woman's willful deception of a friend, an arguably more dramatic and personal event. It may be that the relevance and consequences of this type of behavior was a more difficult action to forgive with such limited information provided. Recall that the nature of this event was deemed salient to female friendships' emphasis on loyalty (Virgil, 2007). While this infraction could elicit empathy from a listener in the time allotted, forgiveness of the event likely requires a greater amount of time and processing (Worthington et al., 2000).

It has been argued that forgiveness is difficult to define (Konstam, Chernoff, & Deveney, 2001), both conceptually as a process (Worthington, 2000) and operationally, in

terms of measurement (Valadez & Evans, 2005). In the current study, the internal consistency for the chosen measure of forgiveness was found to be low in comparison with other research (Rye et al., 2001), It is difficult to know whether this indicates that the measure created confusion for respondents, or whether the scenario that was described led to more ambiguity relative to previous studies (e.g., Takuku, 2001). It is also possible that willingly misleading a friend (the event for this study), does lead to ambivalence when ascertaining whether to forgive someone.

As with forgiveness, despite the increase in empathic understanding of the target, the instructional sets did not increase liking irrespective of decoding instructions. In fact, across conditions and samples, it appears that the participants remained neutral in their reports of how much they liked the target. Batson, Eklund, Chermok, Hoyt, and Ortiz (2007) found that active perspective taking increased liking more so when a target involved in an accident had been helpful to elderly woman rather than rude to her prior to the event. Batson et al. proposed that despite the misfortune of the target across the scenarios, participants valued his welfare more if he had formerly been characterized as kind. The women in this study may have had difficulty feeling positively toward the target who admitted to intentional deception of a friend, regardless of instructional set. Although they could empathize with the reasoning behind her decision, overt liking might have required more time to achieve.

By contrast, mimicry has been found to increase a target's liking of *the observer* (e.g., Chartrand & Bargh, 2009; van Baaren, Holland, Kawakami, et al., 2004, van Baaren, Holland, Steenaert, et al., 2004). Specifically, Chartrand and Bargh (1999) found that participants liking of the observer increased when the observer mimicked their body movements (i.e., foot shaking and touching his/her own face), but the observer's liking of the

target did not necessarily increase. Furthermore, enhanced liking for a target as a function of facial mimicry had not yet been tested, to my knowledge. Unfortunately, the current study did not find evidence for an increase in liking for this type of physical decoding strategy. It may be that this is a unidirectional process and liking is only increased as a result of being mimicked in an actual face-to-face encounter.

　　Although the findings for those who correctly identified their respective decoding instructions are promising, the majority of the participants were not able to state by the study's conclusion which instructional set they had followed. Indeed, fewer than 40% answered the manipulation check correctly. Previous research has demonstrated that the act of decoding both verbal and nonverbal behaviors simultaneously is cognitively taxing and attentionally demanding (e.g., Keisler, 1998; Phillips et al., 2007; Watzlawick et al., 1967), and this may be particularly the case when attending to a transgression with important social consequences. This could account for some participants' difficulties in interpreting and completing the instructions. For example, in the perspective-taking condition more than 60 percent of the participants reported that the instructions in the experiment were to *take another's perspective*, however, half took the perspective of the *victim* instead of the target, as was instructed. In addition, it may be that participants were not motivated enough to comprehend and/or complete the task given that the instructions, stimulus, and survey were all computer based. Those who successfully answered the manipulation check may have had both the ability and motivation to complete the instructions.

　　Finally, there is support for the idea that interpersonal communication is a bidirectional learning process in regards to the acquisition and maintenance of communication skills (Boyatzis & Satyaprasad, 1994). That is, individuals who lack

appropriate communicational skills may suffer both personally and interpersonally, and in the same way, poorly functioning interpersonal relationships may result in inappropriate communicational skills (Boyatzis & Satyaprasad, 1994). In support of this notion, adeptness at both perspective-taking (Gleason, Jensen-Campbell, & Ickes, 2009) and mimicry (Chartrand & Bargh, 1999) have been linked to empathic responding. Perhaps across instructional conditions, those who correctly identified the manipulation check were individuals who excel at these processes, where as those who failed to identify their respective instructions were individuals who experience more difficulty in utilizing decoding skills. Since there was no assessment of decoding propensity prior to the manipulation, it is impossible to test whether this occurred.

Limitations. The current study suffered multiple methodological weaknesses. The decision had been made for participants to complete the study in person (rather than on-line), but the survey instruments and video representation of the transgression was completely computer-based. This may have minimized the interpersonal dynamic of the instructional sets. Provisions were made to create an as-real-as-possible stimulus (e.g., using a video instead of a picture or written story and giving a cover story about the apology being a YouTube video) as promoted by Chen et al. (1988). In addition, care was taken to consider the relevancy of the stimulus and whether or not the participants had experienced such a situation prior to the study.

Further, given the substantial number of participants who did not accurately report their assigned instructional set (61%), it is fair to say that the experimental instructions were not clearly articulated, particularly given that similar rates of failure occurred across the three sets. These instructions were adapted from prior studies (Batson, Early, et al., 1997; Stel et

al., 2009). With regard to perspective taking, Batson, Early et al. used a manipulation check much like the one used in this study that asked the participants to identify which action they had completed (imagine-self, imagine-other, or remain objective). Interestingly, participants in Batson et al.'s study, as in the current study, had difficulty differentiating between which perspectives to take. Greater attention to participants' understanding of the perspective-taking instructions seems warranted for future studies. In addition, Stel et al. (2009) used video to record participant's facial expressions in order to assess the accuracy of their reciprocity with the target's facial expressions. Due to limitations in equipment availability, the current study could not videotape each participant in order to check for facial movement synchrony, an important means of determining compliance with the mimicry instructions.

Finally, participants did not know the target personally, nor did they make decisions about the situation that would affect them personally. Instead, because they were removed from the situation (due to limitations of the laboratory setting), they may have relied on strictly cognitive processes to make hypothetical decisions about how they would respond. Perspective-taking is characterized as a cognitive form of interpersonal strategy (Keysar et al., 2000). By comparison, mimicry is a more physical form of comparison that is thought to be reliant on the observer's ability to experience another's emotions through imitation of movements, bodily or facial (Adelmann & Zajonc, 1989). Since the hypothetical decisions made about the target did not affect the participants on an emotional level, participants in the mimicry condition may have been less engaged in her apology. Future research should consider incorporating a stimulus that is more personal to the participants in order to activate both the cognitive and emotional aspects of interpersonal communication.

Future directions. As previously described, research on cognitive and physical decoding strategies would benefit from improving procedures designed to test their utility and benefits for enhancing mutual understanding. The current research demonstrates the importance of including a manipulation check to assess compliance with and understanding of instructions, but more immediate responding rather than placement at the study's conclusion may be more helpful. In other words, it is unclear whether participants did not follow directions, or did not remember which strategy was instructed. Additionally, the wording of the manipulation check should be carefully considered to make sure it is easily understood by participants. Finally, improvements should be made to the decoding instructions. If possible, conducting a check of participants' understanding of the instructions before beginning the task might help to discern which effects are due to the instructional sets and which effects are random or trait based.

Previous research has focused on the link between poor nonverbal skills and personal and social liabilities (e.g. Carton et al., 1999; Izard et al., 2001; Nowicki & Duke, 1992). However, no research has attempted to determine if nonverbal skills could be separated into specific behaviors. The current study did identify at least two behaviors that could be used to enhance interpersonal communication: perspective-taking and mimicry. It is important to note that participants were given only one instructional set, and could not self-select into a preferred style (playing to one's strengths, so-to-speak). Utilizations of strategies that come more naturally to a person may lead to greater increases in empathy and prosocial outcomes than ones that are less familiar. Future research could expand this idea of multiple decoding strategies and explore the possibility that individuals might be deficient in some nonverbal decoding skills but not others.

Conclusions. Interpersonal communication plays a vital role in everyday experiences and can be achieved through both verbal and nonverbal communication. While entire fields of study have been devoted to understanding and training individuals on verbal communication (i.e., speech pathology), less research has been devoted to understanding the underlying skills that surround nonverbal communication. The current study sought to address this issue by identifying two strategies that individuals can use in order to decode nonverbal communication: perspective taking and facial mimicry. Preliminarily, these findings suggest that active inducement of these strategies might have benefits for enhancing empathic bonds with others.

References

Adelmann, P. K., & Zajonc, R. B. (1989). Facial efference and the experience of emotion. *Annual Review of Psychology, 40,* 249-280. doi:10.1146/annurev.ps.40.020189.001341

Archer, D., & Costanzo, M. (1988). *A guide to the Interpersonal Perception Task (IPT) for instructors and researchers.* Berkeley, CA: University of California Center for Media.

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63,* 596–612. doi:10.1037/0022-3514.63.4.596

Aron, A., Lewandowski Jr, G. W., Mashek, D., & Aron, E. N. (2013). The self-expansion model of motivation and cognition in close relationships. In J.A. Simpson, & L. Campbell (Eds.), *The Oxford handbook of close relationships* (pp. 90-115). New York, NY: Oxford University Press.

Ashton-James, C., van Baaren, R. B., Chartrand, T. L., Decety, J., & Karremans, J. (2007). Mimicry and me: The impact of mimicry on self-construal. *Social Cognition, 25,* 518-535. doi:10.1521/soco.2007.25.4.518

Baddeley, A. D., & Hitch, G. (1974). Working memory. *Psychology of Learning and Motivation, 8,* 47-89. doi:10.1016/S0079-7421(08)60452-1

Batson, C. D., Early, S., & Salvarani, G. (1997). Perspective taking: Imagining how another

feels versus imagining how you would feel. *Personality and Social Psychology*

Bulletin, 23, 751-758. doi:10.1177/0146167297237008

Batson, C. D., Eklund, J. H., Chermok, V. L., Hoyt, J. L., & Ortiz, B. G. (2007). An

additional antecedent of empathic concern: Valuing the welfare of the person in need.

Journal of Personality and Social Psychology, 93, 65-74. doi:10.1037/0022-

3514.93.1.65

Batson, C. D., Polycarpou, M. P., Harmon-Jones, E., Imhoff, H.J., Mitcheener, E. C., Bednar,

L. L., . . . Highberger, L. (1997). Empathy and attitudes: Can feeling for a member of

a stigmatized group improve feelings toward the group? *Journal of Personality and*

Social Psychology, 72, 105-118. doi:10.1037/0022-3514.72.1.105

Blairy, S., Herrera, P., & Hess, U. (1999). Mimicry and the judgment of emotional facial

expressions. *Journal of Nonverbal Behavior, 23,* 5-41.

doi:10.1023/A:1021370825283

Bogart, K. R., & Matsumoto, D. (2010). Facial mimicry is not necessary to recognize

emotion: Facial expression recognition by people with Moebius syndrome. *Social*

Neuroscience, 5, 241-251. doi:10.1080/1747091090339569

Boyatzis, C. J., & Satyaprasad, C. (1994). Children's facial and gestural decoding and

encoding: Relations between skills and with popularity. *Journal of Nonverbal*

Behavior, 18, 37-55. doi:10.1007/BF02169078

Buchner, A., Erdfelder, E., Faul, F., & Lang, A. (2009). G*Power (Version3.1.2) [Computer program].

Byron, K. (2008). Carrying too heavy a load? The communication and miscommunication of emotion by email. *Academy of Management Review, 2,* 309-327. doi:10.5465/AMR.2008.31193163

Carton, J. S., Kessler, E. A., & Pape, C. L. (1999). Nonverbal decoding skills and relationship well-being in adults. *Journal of Nonverbal Behavior*, *23*, 91-100. doi:10.1023/A:1021339410262

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology, 76,* 893-910. doi:10.1037/0022/-3514.76.6.893

Chen, H. J., Yates, B.T., & McGinnies, E. (1988). Effects of involvement on observers' estimates of consensus, distinctiveness, and consistency. *Personality and Social Psychology Bulletin, 14,* 468-478. doi:10.1177/0146167288143005

Cochran, K. A. (2014). How do we forgive?: An empirical framework for the underlying processes of overcoming interpersonal betrayal. (Unpublished master's thesis). Appalachian State University, Boone, NC.

Costanzo, M., & Archer, D. (1989). Interpreting the expressive behavior of others: The Interpersonal Perception Task. *Journal of Nonverbal Behavior*, *134,* 225–245. doi:10.1007/BF00990295

Custrini, R. J., & Feldman, R. S. (1989). Children's social competence and nonverbal

    encoding and decoding of emotions. *Journal of Child Clinical Psychology, 4,* 336-

    342. doi:10.1207/s15374424jccp1804_7

Darwin, C. (1872). *The expression of emotions in man and animals.* London, England:

    Murray.

Davis, M. H. (1980). A multidimensional approach to individual difference in empathy.

    Journal Supplemental Abstract Service: Catalog of Select Documents in Psychology,

    10, 85-103.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a

    multidimensional approach. *Journal of Personality and Social Psychology, 44,* 113-

    126. doi:10.1037/0022-3514.44.1.113

Davis, M. H., Conklin, L., Smith, A., & Luce, C. (1996). Effect of perspective-taking on the

    cognitive representation of persons: A merging of self and other. *Journal of*

    Personality and Social Psychology, 70, 713-726. doi:10.1037/0022-3514.70.4.713

Davis, J. R., & Gold, G. J. (2011). An examination of emotional empathy, attributions of

    stability, and the link between perceived remorse and forgiveness. *Personality and*

    Individual Differences, *50*, 392–397. doi:10.1016/j.paid.2010.10.031

Decety, J., & Jackson, P. (2006). A social neuroscience perspective on empathy. *Current*

    Directions in Psychological Science, 15, 54–58. doi:10.1111/j.0963-

    7214.2006.00406.x

Decety, J., & Lamm, C. (2006). Human empathy through the lens of social neuroscience. *The Scientific World Journal, 6,* 1146–1163.

Dimberg, U. (1982). Facial reactions to facial expressions. *Psychophysiology, 19,* 643-647. doi:10.1111/j.1469-8986.1982.tb02516.x

Dimberg, U., Thunberg, M., & Elmehed, K. (2000). Unconscious facial reactions to emotional facial expressions. *Psychological Science, 11,* 86–89. doi:10.1111/1467-9280.00221

Duncan, E. L. (1976). Differential social perception and attribution of intergroup violence: Testing the lower limits of stereotyping of blacks. *Journal of Personality and Social Psychology, 34,* 590-598. doi:10.1037/0022-3514.34.4.590

Duncan, S. (1969). Nonverbal communication. *Psychological Bulletin, 72,* 118-137.

Ekman, P., & Friesen, W. V. (1981). The repertoire of nonverbal behavior: Categories, origins, usage, and coding. *Nonverbal communication, interaction, and gesture*, 57-106.

Ekman, P., & Friesen, W. V. (1975). *Unmasking the face.* Englewood Cliffs, NJ: Prentice Hall.

Feldman, R. S., & Rimé, B. (Eds.). (1991). *Fundamentals of nonverbal behavior*. Paris, France: Cambridge University Press.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics.* Thousand Oaks, CA: SAGE Publications.

Friedman, H. S. (1978). The relative strength of verbal versus nonverbal cues. *Personality and Social Psychology Bulletin, 4,* 147-150. doi:10.1177/014616727800400132

Galinksy, A. D., Ku, G., & Wang, C. S. (2005). Perspective-taking and self-other overlap: Fostering social bonds and facilitating social coordination. *Group Processes & Intergroup Relations, 8,* 109-124. doi:101177/1268430205051060

Galinsky, A. D., Maddux, W. W., Gilin, D., & White, J. B. (2008). Why it pays to get inside the head of your opponent: The differential effects of perspective taking and empathy in negotiations. *Psychological Science, 19,* 378-384. doi:10.1111/j.1467-9280.2008.02096.x

Galinksy, A. D., & Moskowitz, G. B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology, 78,* 708-724. doi:10.1037/0022-3514.78.4.708

Galinsky, A. D., Wang, C. S., & Ku, G. (2008). Perspective-takers behave more stereotypically. *Journal of Personality and Social Psychology, 95,* 404–419. doi:10.1037/0022-3514.95.2.404

Gleason, K. A., Jensen-Campbell, L. A., & Ickes, W. (2009). The role of empathic accuracy in adolescents' peer relations and adjustment. *Personality and Social Psychology Bulletin, 35,* 997-1011. doi:10.1177/0146167209336605

Goldman, A. (2006). *Simulating minds: The philosophy, psychology, and neuroscience of mindreading.* New York, NY: Oxford University Press.

Goldman, A. I., & Sripada, C. S. (2005). Simulationist models of face-based emotion recognition. *Cognition, 94,* 193-213. doi:10.1016/j.cognition.2004.01.005

Goldstein, N. J., Vezich, I. S., & Shapiro, J. R. (2014). Perceived perspective taking: When

  others walk in our shoes. *Journal of Personality and Social Psychology, 106,* 941-

  960. doi:10.1037/a0036395

Guéguen, N. (2011). The mimicker is a mirror of myself: Impact of mimicking on self-

  consciousness and social anxiety. *Social Behavior and Personality, 39,* 725-728.

  doi:10.2224/sbp.2011.39.6.725

Halberstadt, A. G., Denham, S. A., & Dunsmore, J. C. (2001). Affective social competence.

  Social Development, 10, 79-119. doi:10.1111/1467-9507.00150

Hall, J. A. (1978). Gender effects in decoding nonverbal cues. *Psychological Bulletin, 85,*

  845–857. doi:10.1037/0033- 2909.85.4.845.

Hess, U., & Fischer, A. (2013). Emotional mimicry as social regulation. *Personality and*

  Social Psychology, 17, 142-157. doi:10.1177/1088868312472607

Hess, U., Kappas, A., McHugo, G. J., Lanzetta, J. T., & Kleck, R. E. (1992). The facilitative

  effect of facial expression on the self-generation of emotion. *International Journal of*

  Psychophysiology, 12, 251-265. doi:10.1016/0167-8760(92)90064-I

Hodges, S. D., Clark, B. A., & Meyers, M. W. (2011). Better living through perspective

  taking. In R. Biswas-Diener (Ed.), *Positive psychology as social change* (pp. 193-

  218). Dordrecht, the Netherlands: Springer.

Izard, C. E., Fine, S., Schultz, D., Mostow, A., Ackerman, B., & Youngstrom, E. (2001).

  Emotion knowledge as a predictor of social behavior and academic competence in

  children at risk. *Psychological Science, 12,* 18-24. doi:10.1111/1467-9280.00304

James, W. (1884). What is emotion? *Mind, 19,* 188-205.

Keysar, B., Barr, D. J., Balin, J. A., & Brauner, J. S. (2000). Taking perspective in conversation: The role of mutual knowledge in comprehension. *Psychological Science, 18,* 32-38. doi:10.1111/1467-9280.00211

Kiesler, D. J. (1988). *Therapeutic metacommunication: Therapist impact disclosure as feedback in psychotherapy.* New York, NY: Consulting Psychologist Press.

King, L. A., & Emmons, R. A. (1990). Conflict over emotional expression: Psychological and physical correlates. *Journal of Personality and Social Psychology*, *58*, 864-877. doi:10.1037/0022-3514.58.5.864

Koerner, A. F., & Fitzpatrick, M. A. (2002). Nonverbal communication and marital adjustment and satisfaction: The role of decoding relationship relevant and relationship irrelevant affect. *Communication Monographs, 69,* 33-51. doi:10.1080/03637750216537

Konrath, S., O'Brien, E. H., & Hsing, C. (2011). Changes in dispositional empathy in American college students over time: A meta-analysis. *Personality and Social Psychology Review, 15,* 180-198. doi:10.1177/1088868310377395

Konstam, V., Chernoff, M., & Deveney, S. (2001). Toward forgiveness: The role of shame, guilt, anger, and empathy. *Counseling and Values, 46,* 26-39. doi:10.1002/j.2161-007X.2001.tb00204.x

Kruger, J., Epley, N., Parker, J., & Ng, Z. (2005). Egocentrism over e-mail: Can we communication? *Journal of Personality and Social Psychology, 6,* 925-936. doi:10.1037/0022-3514.89.6.925

Laird, J. D., Alibozak, T., Davainis, D., Deignan, K., Fontanella, K., Hong, J., Levy, B., &
     Pacheco, C. (1994). Individual differences in the effects of spontaneous mimicry on
     emotional contagion. *Motivation and Emotion, 18,* 231-246.
     doi:10.1007/BF02254830

Laird, J. D., & Bresler, C. (1992). The process of emotional experience: A self-perception
     theory. In M. S. Clark (ed.), *Emotion: Review of personality and social psychology*
     (Vol. 13). Newbury, Park, CA: Sage.

Maner, J. K., Luce, C. L., Neuberg, S. L., Cialdini, R. B., Brown, S., & Sargarin, B.J. (2002).
     The effects of perspective taking on motivations for helping: Still no evidence for
     altruism. *Personality and Social Psychology Bulletin, 28,* 1601-1610.
     doi:10.1177/014616702237586

McCullough, M. E., Worthington, E. L., & Rachal, K. C. (1997). Interpersonal forgiving in
     close relationships. *Journal of Personality and Social Psychology*, *73*, 321–36.

McIntosh, D. N. (1996). Facial feedback hypotheses: Evidence, implications, and directions.
     Motivation and Emotion, 20, 121-147. doi:10.1007/BF02253868

Mehrabian, A., & Epstein, N. (1972) A measure of emotional empathy. *Journal of
     Personality, 40,* 525-543. doi:10.1037/0022-3514.48.3.635

Mehrabian, A., & Ferris, S. R. (1967). Inference of attitudes from nonverbal communication
     in two channels. *Journal of Consulting Psychology, 31,* 248-252.
     doi:0.1037/h0024648

Meltzoff, A. N., & Moore, M. K. (1997). Imitation of facial and manual gestures by human

   neonates. *Science, 198,* 75-78.

Neale, M. A., & Bazerman, M. H. (1983). The effects of perspective taking ability under

   alternate forms of arbitration on the negotiation process. *Industrial and Labor*

   Relations Review, 36, 378-388. doi:10.2307/2523017

Neumann, R., & Strack, F. (2000). "Mood contagion": The automatic transfer of mood

   between persons. *Journal of Personality and Social Psychology, 79,* 211-223.

   doi:10.1037//0022-3514.79.2.211

Niedenthal, P. M. (2007). Embodying emotion. *Science*, *316*, 1002-1005.

   doi:10.1126/science.1136930

Niedenthal, P. M., Brauer, M., Halberstadt, J. B., & Innes-Ker, A. H. (2001). When did her

   smile drop? Facial mimicry and the influences of emotional state on the detection of

   change in emotional expression. *Cognition and Emotion, 15,* 853-864.

   doi:10.1080/02699930143000194

Noller, P. (1985). Video primacy – A further look. *Journal of Nonverbal Behavior, 9,* 28-47.

   doi:10.1007/BF00987557

Nowicki, S., Jr., & Duke, M. P. (1989, June). *Measuring nonverbal social processing ability*

   in children between the ages of 6 and 10. Paper presented at the annual meeting of the

   American Psychological Society, Alexandria, VA.

Nowicki, S., Jr., & Duke, M.P. (1992). The association of children's nonverbal decoding

    abilities with their popularity, locus of control, and academic achievement. *The*

    Journal of Genetic Psychology, 153, 385-393. doi:10.1080/00221325.1992.10753734

Oberman, L. M., Winkielman, P., & Ramachandran, V. S. (2007). Face to face: Blocking

    facial mimicry can selectively impair recognition of emotional expressions. *Social*

    Neuroscience, 2, 167-178. doi:10.1080/17470910701391943

O'Brien, T. B., DeLongis, A., Pomaki, G., Puterman, E., & Zwicker, A. (2009). Couples

    coping with stress: The role of empathic responding. *European Psychologist*, *14,* 18-

    28. doi:10.1027/1016-9040.14.1.18

Phillips, L. H., Tunstall, M., & Channon, S. (2007). Exploring the role of working memory in

    dynamic social cue decoding using dual task methodology. *Journal of Nonverbal*

    Behavior, 31, 137-152. doi:10.1007/s10919-007-0026-6

Pollak, S. D., Cicchetti, D., Hornung, K., & Reed, A. (2000). Recognizing emotion in faces:

    Developmental effects of child abuse and neglect. *Developmental Psychology, 35,*

    679-688. doi:10.1037//012-1649.36.5.679

Ponari, M., Conson, M., D'Amico, N. P., Grossi, D., & Trojano, L. (2012). Mapping

    correspondence between facial mimicry and emotion recognition in healthy subjects.

    Emotion, 12, 1398-1403. doi:10.1037/a002858

Rosenthal, R., Hall, J. A., DiMatteo, M. R., Rogers, P. L. & Archer, D. (1979). *Sensitivity to*

    nonverbal communication: The PONS test. Baltimore, MD: The Johns Hopkins

    University Press.

Rye, M. S., Loiacono, D. M., Folck, C. D., Olszewski, B. T., Heim, T. A., & Madia, B. P. (2001). Evaluation of the psychometric properties of two forgiveness scales. *Current Psychology, 20,* 260–277. doi:10.1007/s12144-001-1011-6

Schneider, K. G. (2008). Expressive control and emotion perception: The impact of expressive suppression and mimicry on sensitivity to facial expressions of emotion. (Doctoral dissertation). Retrieved from http://dukespace.lib.duke.edu/dspace/handle/10161/824

Shen, L. (2010). On a scale of state empathy during message processing. *Western Journal of Communication*, *74*, 504-524. doi:10.1080/10570314.2010.512278

Sonnby-Borgström, M. (2002). Automatic mimicry reactions as related to differences in emotional empathy. *Scandinavian Journal of Psychology, 43,* 433-443. doi:10.1111/1467-9450.00312

Stel, M., Rispens, S., Leliveld, M., & Lokhorst, A. M. (2011). The consequences of mimicry for prosocials and proselfs: Effects of social value orientation on the mimicry-liking link. *European Journal of Social Psychology, 41,* 269-274. doi:10.1002/ejsp.790

Stel, M., van Baaren, R. B., & Vonk, R. (2008). Effects of mimicking: Acting prosocially by being emotionally moved. *European Journal of Social Psychology, 38,* 965-976. doi:10.1002/ejsp.472

Stel, M., van den Heuvel, C., & Smeets, R. C. (2008). Facial feedback mechanisms in autistic spectrum disorders. *Journal of Autism and Developmental Disorders*, *38*, 1250-1258. doi:10.1007/s10803-007-0505-y

Stel, M., van Dijk, E., & Olivier, E. (2009). You want to know the truth? Then don't mimic!

Psychological Science, 20, 693-699. doi:10.1111/j.1467-9280.2009.02350.x

Strack, F., Martin, F., & Stepper, S. (1988). Inhibiting and facilitating conditions of the

human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of*

Personality and Social Psychology, 54, 768-777. doi:10.1037/0022-3514.54.5.768

Takaku, S. (2001). The effects of apology and perspective taking on interpersonal

forgiveness: A dissonance-attribution model of interpersonal forgiveness. *The*

Journal of Social Psychology, *141*, 494–508. doi:10.1080/00224540109600567

Valadex, A. A., & Evans, M. (2005). A novel approach: Using literary writing and creative

interventions for working toward forgiveness after relationship dissolution and

divorce. *Journal of Creativity in Mental Health, 1,* 103-121. doi:10.1300/J456v01n03

van Baaren, R., Holland, R. W., Kawakami, K., & van Knippenberg, A. (2004). Mimicry and

prosocial behavior. *Psychological Science, 15,* 71-74. doi:10.1111/j.0963-

7214.2004.01501012.x

van Baaren, R., Holland, R. W., Steenaert, B., & van Knippenberg, A. (2004). Mimicry for

money: Behavioral consequences of imitation. *Journal of Experimental Psychology,*

39, 393-398. doi:10.1016/S0022-1031(03)00014-3

van Baaren, R., Janssen, L., Chartrand, T. L., & Dijksterhuis, A. (2009). Where is the love?

The social aspects of mimicry. *Philosophical Transactions of the Royal Society B:*

Biological Sciences, 364, 2381-2389. doi:10.1098/rstb.2009.0057

Vigil, J. M. (2007). Asymmetries in the friendship preferences and social styles of men and

women. *Human Nature*, *18*, 143-161. doi:10.1007/s12110-007-9003-3

Waldvogel, J. (2002). Some features of workplace emails. *New Zealand English Journal, 16,*

    42-52.

Wallbott, H. G. (1991). Recognition of emotion from facial expression via imitation? Some

    indirect evidence for an old theory. *British Journal of Social Psychology, 30,* 207–

    219. doi:10.1111/j.2044-8309.1991.tb00939.x

Walther, J. B., & D'Addario, K. P. (2001). The impact of emoticons on message

    interpretation in computer-mediated communications. *Social Science Computer*

    Review, 19, 324-347. doi:10.1177/089443930101900307

Watzlawick, P., Beavin, J. H., & Jackson, D. (1967). *Pragmatics of human communication:*

    A study of interactional patterns, pathologies, and paradoxes. New York, NY:

    Norton.

Wicker, B., Keysers, C., Plailly, J., Royet, J. P., Gallese, V., & Rizzolatti, G. (2003). Both of

    us disgusted in my insula: The common neural basis of seeing and feeling disgust.

    Neuron, *40*, 655-664. doi:10.1016/S0896-6273(03)00679-2

Worthington, E. L., Kurusu, T. A., Collins, W. A., Berry, J. W., Ripley, J. S., & Baier, S.N.

    (2000). Forgiving usually takes time: A lesson learned by studying interventions to

    promote forgiveness. *Journal of Psychology and Theology, 28,* 3–20. doi:2000-

    15404-001

Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1986). Humans as deceivers and lie

    detectors. In P. Blanck, R. Buck, & R. Rosenthal (Eds.), *Nonverbal communication in*

the clinical context (pp. 13-35). University Park, PN: Pennsylvania State Press

University Press.

Zuckerman, M., Lipets, M. S., Koivumaki, J. H., & Rosenthal, R. (1975). Encoding and

decoding nonverbal cues of emotion. Journal of Personality and Social Psychology,

32, 1068-1076. doi:10.1037/0022-3514.32.6.1068

Table 1

Descriptives: Means, standard deviations, and range for Trait Empathy and all dependent variables (State Empathy, Liking, Self-Other Overlap, Inclusion of Other in Self, Forgiveness) of both samples

	Perspective-Taking		Mimicry		Control	
Sample One	*M* (*SD*)	Range	*M* (*SD*)	Range	*M* (*SD*)	Range
Trait Empathy	3.51 (.34)	2.86-4.18	3.54 (.28)	3.11-4.18	3.52 (.33)	2.57-4.18
State Empathy	3.37 (.88)	1.92-5.00	3.10 (.80)	1.42-4.58	2.97 (.70)	1.58-4.42
Liking	4.18 (1.19)	1.00-6.00	4.21 (1.18)	1.00-6.00	4.25 (1.08)	2.00-7.00
Self-Other Overlap	2.55 (1.0)	1.00-4.63	2.60 (.88)	1.00-4.13	2.44 (.89)	1.00-3.75
Inclusion of Other in Self	4.18 (1.19)	2.00-6.00	4.21 (1.18)	1.00-6.00	4.25 (1.08)	2.00-7.00
Forgiveness	49.61 (11.01)	28.00-68.00	50.82 (10.26)	30.00-72.00	50.68 (10.73)	31.00-70.00
Sample Two						
Trait Empathy	3.53 (.39)	4.18-3.53	3.47 (.25)	4.18-3.47	3.43 (.37)	2.57-3.82
State Empathy	3.72 (.76)	3.07-4.18	3.47 (.25)	3.18-4.18	2.67 (.60)	1.83-3.75
Liking	4.58 (1.24)	2.00-6.00	4.14 (1.23)	1.00-6.00	3.82 (1.08)	2.00-6.00
Self-Other Overlap	2.91 (.95)	1.38-4.63	2.54 (.77)	1.00-3.88	1.86 (.74)	1.00-3.25
Inclusion of Other in Self	3.00 (1.47)	1.00-6.00	3.21 (1.31)	2.00-6.00	2.00 (.78)	1.00-3.00
Forgiveness	51.00 (11.92)	31.00-68.00	50.50 (8.52)	38.00-68.00	53.73 (10.31)	33.00-65.00

Table 2

Sample 1: Intercorrelations between Trait Empathy, State Empathy, Prosocial Outcomes, and Forgiveness

Measures	State Empathy	Liking	Self-Other Overlap	Inclusion of Self in Other	Forgiveness
Trait Empathy	.40***	.35***	.45***	.39***	.21*
State Empathy		.59***	.74***	.64***	.10
Liking			.55***	.44***	.27**
Self-Other Overlap				.72***	.04
Inclusion of Self in Other					.08

*Note: *p < .05, **p < .01, ***p < .001*

Table 3

Sample 2: Intercorrelations between Trait Empathy, State Empathy, Prosocial Outcomes, and Forgiveness

Measures	State Empathy	Liking	Self-Other Overlap	Inclusion of Self in Other	Forgiveness
Trait Empathy	.47**	.48**	.42**	.42**	.28
State Empathy		.60***	.80***	.64**	.27
Liking			.54***	.29	.38*
Self-Other Overlap				.69***	.10
Inclusion of Self in Other					.20

*Note: *p < .05, **p < .01, ***p < .001*

Table 4

Sample 2: Means, standard deviations, t-values, degrees of freedom, and d-values for 2 (perspective-taking and mimicry) vs. 1(control) a priori planned comparison analysis of variance

| | Experimental Groups | | | | | |
	Perspective-Taking	Mimicry	Control	*t*	*d.f.*	*d*
State Empathy	3.72 (.76)	2.95 (.75)	2.67 (.60)	2.56*	2, 34	.44
Liking	4.58 (1.24)	4.14 (1.23)	3.82 (1.08)	1.27	2, 34	.22
Self-Other Overlap	2.91 (.95)	2.54 (.77)	1.86 (.74)	2.89**	2, 34	.50
Inclusion of Self in Other	3.00 (1.48)	3.21 (1.31)	2.00 (.78)	2.48*	2, 34	.42

*Note. *p <.05, **p < .01*

Table 5

Sample 2: Analysis of covariance: Trait Empathy as a covariate for (State Empathy, Liking, Self-Other Overlap, Inclusion of Other in Self, Forgiveness) across conditions (Perspective-taking, Mimicry, and Control)

Source	MS	F	df	p	partial η^2
State Empathy					
Trait	4.12	10.34	1	.003*	.24
Condition	2.77	6.97	2	.003*	.30
Liking					
Trait	10.60	9.29	1	.005*	.220
Condition	1.03	.90	2	.417	.052
Self-Other Overlap					
Trait	4.01	6.93	1	.013	.17
Condition	2.59	4.46	2	.019	.21
Inclusion of Other in Self					
Trait	4.19	7.37	1	.010	.183
Condition	1.30	3.23	2	.052	.164
Forgiveness					
Trait	315.34	3.20	1	.083	.09
Condition	50.30	.51	2	.605	.03

Note. * $p < .008$, where *p*-value are adjusted using the Bonferroni's correction method.

Appendix A

IRB Approval

To: Alison Cooke
Psychology
EMAIL

From: Dr. Lisa Curtin, Institutional Review Board Chairperson
Date: 12/05/2014
RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)
Study #: 15-0137

Study Title: Facial Mimicry Versus Perspective-taking Instructional Sets as Empathy-inducing Strategies in Conflict Resolution and Forgiveness
Submission Type: Initial
Expedited Category: (7) Research on Group Characteristics or Behavior, or Surveys, Interviews, etc.
Approval Date: 12/05/2014
Expiration Date of Approval: 12/04/2015

The Institutional Review Board (IRB) approved this study for the period indicated above. The IRB found that the research procedures meet the expedited category cited above. IRB approval is limited to the activities described in the IRB approved materials, and extends to the performance of the described activities in the sites identified in the IRB application. In accordance with this approval, IRB findings and approval conditions for the conduct of this research are listed below.

Approval Conditions:

Appalachian State University Policies: All individuals engaged in research with human participants are responsible for compliance with the University policies and procedures, and IRB determinations.

Principal Investigator Responsibilities: The PI should review the IRB's list of PI responsibilities. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records.

Modifications and Addendums: IRB approval must be sought and obtained for any proposed

modification or addendum (e.g., a change in procedure, personnel, study location, study instruments) to the IRB approved protocol, and informed consent form before changes may be implemented, unless changes are necessary to eliminate apparent immediate hazards to participants. Changes to eliminate apparent immediate hazards must be reported promptly to the IRB.

Approval Expiration and Continuing Review: The PI is responsible for requesting continuing review in a timely manner and receiving continuing approval for the duration of the research with human participants. Lapses in approval should be avoided to protect the welfare of enrolled participants. If approval expires, all research activities with human participants must cease.

Prompt Reporting of Events: Unanticipated Problems involving risks to participants or others; serious or continuing noncompliance with IRB requirements and determinations; and suspension or termination of IRB approval by an external entity, must be promptly reported to the IRB.

Closing a study: When research procedures with human subjects are completed, please complete the Request for Closure of IRB review form and send it to irb@appstate.edu.

Websites:

1. PI responsibilities:
http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI%20Responsibilities.pdf

2. IRB forms: http://researchprotections.appstate.edu/human-subjects/irb-forms

CC:
Doris Bazzini, Psychology

Appendix B

Informed Consent for Thesis Study

Consent to Participate in Research: Information to Consider About this Research

Impression Formation

Principal Investigator:
Alison Cooke
        Dept. of Psychology
        Appalachian State University
        cookean@email.appstate.edu
        828.262.2272
Faculty Advisor:
Doris Bazzini, Ph.D.
        Dept. of Psychology
        Appalachian State University
        bazzinidg@appstate.edu
        828.262.2272

You are being invited to take part in a study that examines how people form first impressions in interpersonal relationships. You will be asked to watch a brief video and then to answer a series of questions based on your response to the situation.

What are the possible benefits and risks of the research?

Your participation may or may not directly benefit you, but this research may help others in the future by furthering our understanding of relationships and social interactions.

To the best of our knowledge, there are no risks that might result from participating in this study.

No identifying information will be collected. All responses will be anonymous and will not be linked to you in any way.

Who can I contact if I have questions?

Research assistants are available to answer questions you may have concerning the research. You may also contact the Principal Investigator (cookean@email.appstate.edu) if you have any questions in the future.

Your participation is completely voluntary.

This survey should take approximately 30 – 60 minutes to complete. You may decide to stop at any time for any reason without consequences, or you may choose not to answer any of the

survey questions. If you decide to participate in this study, please advance to the next page using the button below.

You will not be paid for your participation in this study. However, you can earn 2 ELC credits for your participation. There are other research options and non-research options for obtaining extra credit or ELC's. One non-research option to receive 1 ELC is to read an article and write a 1-2 page paper summarizing the article and your reaction to the article. More information about this option can be found at: psych.appstate.edu/research. You may also wish to consult your professor to see if other non-research options are available.

Please note that participation is voluntary and refusal to participate or a decision to discontinue participation at any time will involve no penalty or loss of ELC.
This research project has been approved by the Institutional Review Board of Appalachian State University on 12/5/2014.

Questions regarding the protection of human subjects may be addressed to:

IRB Administrator
Research and Sponsored Programs
Appalachian State University
Boone, NC 28608
Phone: (828)262 – 2692
Email: irb@appstate.edu

Appendix C

Interpersonal Reactivity Index

Please indicate how much each item applies to you (0 = does not describe me well; 4 = describes me very well).

Fantasy Scale

1. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.

2. I really get involved with the feelings of the characters in a novel.

3. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.

4. After seeing a play or movie, I have felt as though I were one of the characters.

5. I daydream and fantasize, with some regularity, about things that might happen to me.

6. Becoming extremely involved in a good book or movie is somewhat rare for me.

7. When I watch a good movie, I can very easily put myself in the place of a leading character.

Perspective-Taking Scale

8. Before criticizing somebody, I try to imagine how I would feel if I were in their place.

9. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.

10. I sometimes try to understand my friends better by imagining how things look from their perspective.

11. I believe that there are two sides to every question and try to look at them both.

12. I sometimes find it difficult to see things from the "other guy's" point of view.

13. I try to look at everybody's side of a disagreement before I make a decision.

14. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.

Empathic Concern Scale

15. When I see someone being taken advantage of, I feel kind of protective toward them.

16. When I see someone being treated unfairly, I sometimes don't feel very much pity for them.

17. I often have tender, concerned feelings for people less fortunate than me.

18. I would describe myself as a pretty soft-hearted person.

19. Sometimes I don't feel sorry for other people when they are having problems.

20. Other people's misfortunes do not usually disturb me a great deal.

21. I am often quite touched by things that I see happen.

Personal Distress Scale

22. When I see someone who badly needs help in an emergency, I go to pieces.

23. Being in a tense emotional situation scares me.

24. When I see someone get hurt, I tend to remain calm.

25. I sometimes feel helpless when I am in the middle of a very emotional situation.

26. In emergency situations, I feel apprehensive and ill-at-ease.

27. I am usually pretty effective in dealing with emergencies.

28. I tend to lose control during emergencies.

Mimicry Addition

29. I sometimes find myself mimicking the body postures of my friends.

30. In a conversation with someone who has a different accent, I find myself talking in their accent.

31. I sometimes find it difficult to mimic other people's emotions.

32. When I see someone crying, I also feel an urge to cry.

33. In a strange situation, I look at other's behaviors to inform how I should behave.

34. When I see other people smiling, I can't help but to smile too.

35. I don't often put much thought into how much space I keep between myself and

others in a conversation.

Distractor Questions

36. When making a first impression, I am often conscious of what I say.

37. When I meet a person for the first time, I remember what they were wearing the most.

38. I often struggle with remembering people's names immediately after I have met them.

39. Personality is the most important quality to me in a person.

40. I am more interested in what person has to say than in what that person is wearing.

41. I use memory tricks to remember people's names when I first meet them.

42. I enjoy meeting new people.

43. I wait until I have gotten to know someone before forming an opinion of them.

44. I have usually made an opinion about someone after first meeting them.

45. I think I make a good first impression.

46. I do not of people positively or negatively after first meeting them.

47. People usually have to get to know me before they begin to like me.

48. I get anxious when I know I have to meet new people.

49. When meeting new people, I consciously make sure I smile.

50. I can remember people's name without too much effort.

51. I often feel I say awkward things when meeting new people.

52. I have a "list" of conversation starters in my head for when I meet new people.

53. When I've met a new person, I remember when we talked about the most.

54. I make judgments about people based on their grammar.

55. When making a judgment about a person, it does not matter to me what they were wearing.

56. I often think of people positively after first meeting them.

Appendix D

State Empathy Scale

For the following questions, consider how you much agree with the statement.

(0 = "not at all"; 4 = "completely").

1. Jessica's emotions are genuine.

2. I experienced the same emotions as Jessica when watching this video.

3. I was in a similar emotional state as the character when watching this message.

4. I can feel Jessica's emotions.

5. I can see Jessica's point of view.

6. I recognize Jessica's situation.

7. I can understand what Jessica was going through in the video.

8. Jessica reactions to the situation are understandable.

9. When watching the message the video, I was fully absorbed.

10. I can relate to what Jessica was going through in the video.

11. I can identify with the situation described in the video.

12. I can identify with Jessica in the video.

Appendix E

Self-Other Overlap

For the following questions, consider how you much agree with the statement.
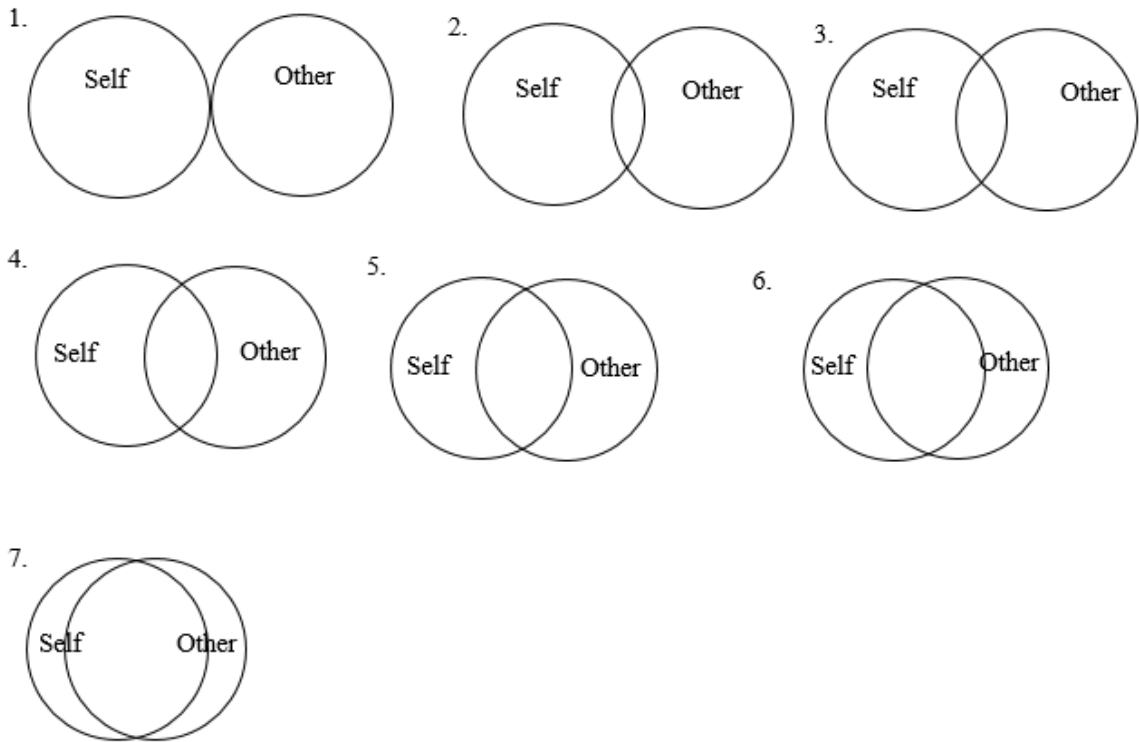
(1 = not at all; 7 = very much)

1. To what extent do you feel you are similar to Jessica?

2. To what extent do you feel a bond with Jessica?

3. To what extent do you feel close to Jessica?

4. To what extent do you feel some tie with Jessica?

5. To what extent do you feel in some way linked to Jessica?

6. To what extent do you feel a close association with Jessica?

7. To what extent do you feel a connection with Jessica?

8. To what extent do you feel a sense of shared identity with Jessica?

Appendix F

Inclusion of Other in the Self Scale

For the following question, please select the picture below that best describes yours and

Jessica's similarities.

1. Self | Other

2. Self | Other

3. Self | Other

4. Self | Other

5. Self | Other

6. Self | Other

7. Self | Other

Appendix G

Liking Scale

For the following questions, please indicate your current thoughts and feelings towards Jessica.

(1 = not at all; 7 = very much).

1. How much do you like Jessica?

Appendix H

Forgiveness Scale

For the following questions, consider how you would respond in the present situation with

Jessica.

(1 = "strongly disagree"; 2 = "disagree"; 3 = "neither agree nor disagree"; 4 = "agree"; 5 =

"strongly agree").

1. I wouldn't be able to stop thinking about how I was wronged by this person.

2. I would wish for good things to happen to the person who wronged me.

3. I would spend time thinking about ways to get back at the person who wronged me.

4. I would feel resentful toward the person who wronged me.

5. I would avoid certain people and/or places if they reminded me of the person who

    wronged me.

6. I would pray for the person who wronged me.

7. If I encountered the person who wronged me I would feel at peace.

8. This person's wrongful actions would keep me from enjoying life.

9. I would be able to let go of my anger toward the person who wronged me.

10. I would become depressed thinking about how I was mistreated by the person who

    wronged me.

11. I think many of the emotional wounds would heal.

12. I would feel hatred whenever thinking about the person who wronged me.

13. I would have compassion for the person who wronged me.

14. My life would be ruined because of this person's wrongful actions.

15. I would hope the person who wronged me is treated fairly by others in the future.

Appendix I

For the following three questions, please rate you answer to the best of your ability.

(1 = "never", 7 = "frequently")

1. Have you ever been in a situation similar to the one described by Jessica?
2. Has a close friend ever been dishonest with you?
3. Have you ever been dishonest with a close friend?

Demographics (options will be given in a drop down display)

4. Age
5. What is your race/ethnicity?
6. What is your sexual orientation?
7. What is your classification?

    Freshman, Sophomore, Junior, Senior, Graduate

8. What is your estimated GPA?

Appendix J

Manipulation Check

During the video of Jessica's interview, I completed one of the following (choose ONE):

1. I imagined myself as Jessica.
2. I imagined myself as Jessica's friend.
3. I recreated Jessica's facial expressions.
4. I only watched Jessica's facial expression while I listened.

Please respond appropriately to the following question:

5. Do you know the actor in the video personally? (yes/no)

Vita

Alison Nicole Cooke was born in West Monroe, Louisiana, to Gordon and Ann Cooke. She graduated from West Monroe High School in 2008 and began undergraduate study at the University of Louisiana at Monroe. Then she completed a semester at Hawaii Pacific University in Honolulu, Hawaii, and completed a Bachelor's of Science at Louisiana State University in Baton Rouge, Louisiana, in the fall of 2011. In the fall of 2013, she continued her studies at Appalachian State University in Boone, North Carolina, working towards her Master's of Arts in the General Experimental Psychology program. She plans to begin study at North Carolina State University in August of 2015, where she will pursue a doctorate degree in Developmental Psychology with a focus on Social Development and Quantitative Methodology.