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Nonconscious Mimicry and its Effect on Rapport and Recall

A THESIS

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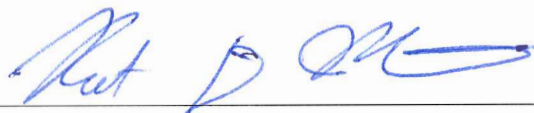
By

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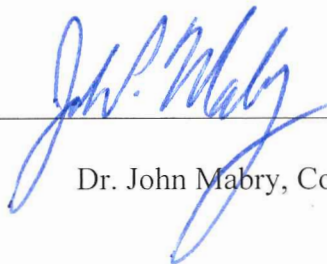APPROVED FOR THE DEPARTMENT OF PSYCHOLOGY

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Abstract

Nonconscious mimicry is used to build rapport as well gain the liking of others, during first encounters and when there is a perceived threat to belonging or existing relationships. Mimicry can occur through verbal and nonverbal methods such as physical gestures, mannerisms and taking on the perception of others. This experiment explored whether the absence or presence of behavioral mimicry affects rapport and recall measured by the accuracy of details. It was hypothesized that behavioral mimicry would result in more accurate recall of details. The hypothesis of the study was not confirmed.

Key Words: Nonconscious Mimicry, Chameleon Effect, Rapport, Affiliation, Imitation

Dedication

This thesis is dedicated to my family and soul tribe for the immense amount of support that they gave me throughout the course of this degree. This thesis is a great contribution in my path to ego harmony.

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Table of Contents

Chapter 1: Nonconscious Mimicry

Nonconscious Mimicry

With social acceptance being vital for human life, there is converging evidence that nonconscious mimicry, imitating someone without awareness, has evolved as a way to build rapport and liking. From an evolutionary perspective, affiliation and acceptance into a group were necessary as it increased the likelihood of survival (Lakin, Chartrand, & Arkin, 2008). Mimicry can occur during an initial interaction, or following exclusion, it also effects perception, degree of conformity, and assumes many forms both verbal and non-verbal. Along with building rapport and liking, mimicry also leads to positive social results such as trust, closeness to others, and helping (Lakin et al., 2008). Because there is a degree of conformity, the act of compromising can be dangerous when mimicry occurs in a negative context.

Rapport is seen as the foundation for investigative interviews with witnesses, suspects and victims. Using rapport is seen as a more humane interviewing technique as opposed to harsh and coercive approaches, as it has been known to reduce anxiety, make the environment more comfortable, create a positive mood and increase accurate recall (Abbe & Brandon, 2013; Vallano & Compo, 2015). However, it has been difficult for scholars and law enforcement personnel to define and measure rapport. Existing literature has used observation techniques and self-report scales following interactions as measurement tools. These methods have limitations, such as observer subjectivity and lack of information to identify the presence and amount of rapport between individuals in an interview. Because mimicry can occur through verbal and nonverbal methods such as physical gestures, mannerisms and taking on the perception of others, it can be measured more easily than an observer's perceived degree of rapport.

Social exclusion, in addition to the desire to build rapport and liking, increases the likelihood that an individual will participate in nonconscious mimicry to gain a sense of social belonging. Of the countless in-groups and out-groups, one that typically goes unchanged is sex. Because it is often unchanged or explicitly defined in terms of biological sexual makeup, women and men are a commonly compared in-group and out-group despite race and ethnicity. When an individual has been excluded, the desire to belong is heightened, but having experienced exclusion at the disposal of an in-group member, results in more nonconscious mimicry to regain a sense of belonging.

Lakin et al. (2008) found that exclusion by an in-group member does not have to occur when individuals are in each other's physical presence, as mimicry will be observed when physical interaction follows exclusion of various kinds. An experiment conducted by Lakin et al. (2008) showed that mimicry occurred when participants were in the presence of female confederates following exclusion in a computer simulated game of cyberball when the sex of the other players was and was not known by participants. In experiment one, participants played a game of computer simulated cyberball where the other players were computer controlled as opposed to being human as participants were told. Participants in the control group received the ball an equal amount of times as others and participants in the experimental group experienced exclusion by receiving the ball a fraction of the times the other two participants did, which occurred only at the beginning of the game. To observe mimicry, a baseline of foot tapping was recorded while the participant sat alone as the experimenter retrieved a female confederate for the participant to describe photographs to who engaged in foot tapping while in the presence of participants.

The participants who had been excluded reported liking cyberball less and were less favorable in their evaluation of the other players than those who had been included. Those who had been excluded also participated in more foot tapping than participants who were included. Building on the results of first experiment supporting more mimicry following exclusion, Lakin et al. (2008), in the second experiment went on to explore the selectivity and sensitivity of in-group exclusion. Their second experiment took on a 3 (condition: in-group exclusion, out-group exclusion, no exclusion) x 2 (confederate: in-group or out-group) design where participants were aware of the sex of the other players in the cyberball game due to names being displayed, which allowed the experimenters to observe the effect that in-group exclusion had on mimicry. Female participants who were excluded by an in-group member reported liking the female confederate more than those who had experienced rejection by members of an outgroup (men) and mimicked the behavior of the confederate more.

The results of these studies show that exclusion alone influences mimicry, and at an even greater degree when the exclusion is experienced by a member of the in-group. This suggests that exclusion by an in-group member strengthens the desire to remain affiliated with the group and leads to mimicry of other in-group members. The findings also support the fact that with no existing relationship, mimicry occurs, and even more following exclusion.

In social interactions individuals may be unaware of the ways in which the exclusion experienced by others has contributed to their positive evaluation. As demonstrated in Lakin et al. (2008) exclusion encourages mimicking of a person one encounters after being excluded. However, exclusion also has an effect on liking the person an individual encounters after they have experienced exclusion by another individual (Lakin & Chartrand, 2003). Along with liking, mimicry can be encouraged by an individual having goal directed behavior as demonstrated by

Lakin and Chartrand (2003). Lakin and Chartrand (2003) give insight to what they call the perception-behavior link, which says that when an individual sees another person participate in a behavior it increases the likelihood that they too will carry out the behavior. Making eye-contact and smiling are signs of respect, attentiveness and value of conversation in American/Western culture, indicating mutual attention (Abbe & Brandon, 2013). In many investigative techniques, writing and question asking occur simultaneously, which could be detrimental to the success of the interview by taking away from the mutual attention. This was explored by Lakin and Chartrand (2003) conducting two studies in which the experimenters measure the amount of mimicry in association with a goal and the effect of the physical presence versus video observation of a confederate performing a target behavior.

Participants were either in the nonconscious-affiliation goal condition where they were primed with affiliation words, or in the conscious-affiliation or no goal condition where they were presented with neutral words. After completing a memory task of the behaviors of another person, individuals watched video of a lady touching her face during and in between completing tasks in an office in what they were told was a connecting room in which the woman was working. Participants in the conscious-affiliation group, in which the goal was explicitly stated by the experimenter, were reminded of the importance of getting along with the woman on the tape, as interaction with her would follow that portion of the study. For individuals in the conscious-affiliation goal condition they touched their faces more than participants in the nonconscious-goal affiliation group and no goal group. Findings from study one further supports the building of rapport and liking as a result of mimicry.

In experiment two, Lakin and Chartrand (2003) examined how failing at a goal to affiliate would affect the degree of mimicry and liking of confederates. Participants were either

in an affiliation-goal or no goal condition, where they conducted two interviews, the first on-line and the second face-to-face. The person in the on-line interview answered the questions in a friendly or unfriendly way, the confederate in the face-to-face setting answered the questions in a neutral tone and participated in foot tapping which was the target behavior. Experimenters then had participants report the degree of success and liking of confederate one and two. Participants who received friendly responses rated the interviewee more highly, as well as the friendliness, mood and likability of the confederate compared to those who received unfriendly responded from those they interviewed. When observing the target behavior of foot tapping the results supported the hypothesis of the experimenters that those who received friendly responses would engage in more mimicking than those who had received negative or neutral responses.

Mimicry has many positive associations that promote belonging. However, considering the level of conformity and degree to which the self is compromised to join a group, mimicry can have negative results. These negative effects can be observed when individuals take on the perspective, characteristics and behaviors of others. Law enforcement personnel such as parole-probation officers, investigators and victim/witness advocates require a degree of compliance from a variety of individuals. Individuals who work these positions carry out a combination of phone calls, office visits and home visits that often take the form of an interview, where rapport is vital (Ireland & Berg, 2008). Smith-Genthôs, Reich, Lakin, and Casa de Calvo (2015), also looked into the effects of negative social interactions on mimicry. However, the difference in this study is that the participants would become the interviewee. The introduction to the interview served as the baseline for tone. Participants were then asked questions in a negative or neutral tone that were pre-recorded and altered to sound more natural. Following the interview, the participant's interviews were rated using scales that assess interpersonal skills, expected

performance and likelihood of hiring. The results showed that the participants who were asked interview questions in a negative tone, perceived the interviewer to have lower expectations than those in the neutral-tone condition, they performed worse than those in the neutral-tone condition and adopted the tone of the interviewer by responding more negatively.

This study supports the fact that mimicry can and does occur in on-going negative social settings despite one's desire to have positive outcomes. These findings suggest that in a situation where mimicry can be beneficial to gain ones liking, it would be in the best interest of the person seeking acceptance to not adopt the negative tone or behaviors of the evaluator as it could result in a negative evaluation of self. Not only is the character of someone judged based on their level of negative conformity but so is their ability and likelihood to succeed. Mimicry not only serves as a way of gaining liking, the outcome and rating of social interaction relies on the nature and context of the mimicry which affects both people who are communicating. Considering the need for compliance, it is important that law enforcement personnel build and maintain rapport to encourage cooperation and perceived positive belief in offender's progress (Ireland & Berg, 2008). Vallano and Compo (2015) suggest the Reid Technique where rapport is built during preliminary interviews and carried over into actual interrogations. It is also important to build rapport in every situation, not just cases considered serious crimes (Vallano & Compo, 2015).

In western culture, making eye-contact during social interactions is a sign of respect, showing the person you are communicating with that you are attentive and value what they are saying. A smile is also a social gesture that encourages communication and serves as social cue to approach or initiate conversation. Chartrand and Bargh (1999), give insight as to how smiling effects the degree of mimicry, and liking as we well as studying the adaptiveness and empathetic aspect of mimicry.

In the Chartrand and Bargh (1999) study, eye contact and smiling had an effect on the mimicking behavior of participants. Participants interacted with two confederates, while alternating turns on describing a set of pictures. The first confederate (C1) would rub their face or shake their foot while smiling or not smiling, followed by a second confederate (C2) who would do the opposite of the first. Lack of smiling does eliminate mimicry, these findings suggest, along with Smith-Genthôs et al. (2015), that participants simply take on the behavior and mannerisms of the person they are interacting with. Participants who were with the smiling confederate smiled more than those who were with the neutral confederate. Participant not only took on the facial expression of the confederate, but the behavior as well. Participants shook their foot more with the foot shaking confederate and rubbed their face more with the face rubbing confederate.

Participants were not given a goal to affiliate in this situation as in the Lakin and Chartrand (2003) study, and mimicking went beyond physical movement to facial expression. When there is a desire for an individual to engage in an activity or to carry out a specific behavior, these findings suggest that without explicitly stating the desire to have the individual do so, participating in the behavior will increase the likelihood that the observer will do the same. Further strengthening the link between perception and behavior.

In experiment two, posture proved to influence the liking of interaction partners and rating of the interaction. As stated, humans tend to like those who mimic them in social settings. Chartrand and Bargh (1999), found that when participants posture, and mannerisms were mimicked by confederates who made no eye contact and maintained a neutral face, participants reported the interaction to have gone more smoothly than those who had not been mimicked, and

liking the confederate more than those who had not been mimicked. This supports the hypothesis that mimicking is related to liking and promotes smoothness of interaction.

In addition to exclusion, the goal to affiliate and failure to affiliate, empathy plays a role in the amount that on mimics. As demonstrated in many social context, a way in which many people identify in-groups are the people with which they share perspectives. Chartrand and Bargh (1999) expected individuals high in empathy to mimic to a greater extent than other people. The procedures were the same, however, the confederate carried out two target behaviors while avoiding eye contact and maintaining a neutral expression. Participants alternated describing pictures just as they had in previous conditions and completed a questionnaire to measure empathy. As expected, those who were high-perspective takers rubbed their face and shook their foot more than low-perspective takers. The results show that those who empathize with others and share perspectives are more likely to participate in mimicking behavior. This study also shows that mimicking behavior can have at least two targets, as foot shaking, and face rubbing were measured in this study.

In terms of the vitality of mutual attention in conversation (Abbe & Brandon, 2013), Chartrand and Bargh, (1999), found that without direct eye contact signs of equality were shown by matching the style of the interviewee through calmness, empathy, and physical gestures such as head nodding to suggest active listening (Vallano & Compo, 2015). Rapport building is also effective with children. Child investigators who smile, have an open body posture and are verbally supportive enhance recall and decrease misinformation as opposed to those who did not use a rapport approach (Vallano & Compo, 2015).

Not only does being mimicked increase liking and perspective taking of those who mimic us, but it also affects the degree in which one feels connected to others. Ashton-James et al.

(2007) explore how the ability to empathize with others increases the likelihood that one will engage in mimicking. Beyond empathy and perspective taking, Ashton-James et al. show the way in which the perception of self affects the degree to which an individual will participate in mimicking behavior. Self-Construal is the degree to which ones feels connected to others. Ashton-James et al. break self-construal into two types, Independent and Interdependent. Those who are independent are less likely to mimic others than those who are more interdependent and feel more connected to others.

In experiment one of the Ashton-James et. al. (2007) article, there was a 2 (Mimicry Condition: mimicry or no mimicry) $\times$ 2 (Gender: female or male) design. Each condition began with an interview where the participant was the individual that would be mimicked. The interview was concluded with a 20 item open ended measure of self-construal. Participants who had been mimicked were more interdependent in self-construal than those who were not mimicked. The gender variable also revealed that females are more interdependent in self-construal than males.

Mimicry not only effects the liking of those who are in immediate interaction, it effects the liking of people in general (Ashton-James et al., 2007). Participants described their perception of articles while they were or were not mimicked by an interviewer. Following the interview, participants completed an Inclusion of Other in the Self (IOS) scale to measure the degree to which they felt connected to others. Participants who had been mimicked by the experimenter felt closer to people in general than the participants who had not been mimicked. The gender variable also had an effect, showing that women feel closer to others than men (Ashton-James et al.). These results show that mimicry in fact, does increase interpersonal closeness toward others.

Beyond how close one feels emotionally to someone or how close their shared perspectives are, physical closeness is also affected by mimicry. There were two conditions, mimicry or no mimicry, where participants were mimicked or not mimicked by an experimenter while discussing traveling information. At the close of the interview the participants were led into another room where they were to wait for the second experiment. With a choice of five chairs to sit in, one of which (the leftmost) had a bag, a jacket, and documents on top, indicating it was being occupied by another person. Participants who had been mimicked sat closer to the occupied chair than the participants who had not (Ashton-James et al., 2007). Indicating that mimicry carries over into our physical closeness and social interactions beyond the immediate.

The mimicry and self-construal relationship proved to have an effect on prosocial behavior when those who were interdependent were proven to be high in empathy and engaging in more mimicking behavior. However, mimicry also affects voluntary actions, such as willingness to help. Ashton-James et al. (2007) showed that participants who were mimicked during an interview about everyday memory, were more interdependent in self-construal when compared to participants who were not mimicked. Following this, the participants were asked if they were willing to assist another experimenter in the lab with data collection by completing a survey without pay. Self-construal influenced willingness to assist the second experimenter with data collection, strengthening the link between mimicry, self-construal and pro-social behavior (Ashton-James et al., 2007). Considering the results of Ashton-James et al. (2007), the benefits of rapport building through mimicry, mimicry's ability to be measured, and its influence on voluntary actions, the incorporation of mimicry in investigative interviews is vital to the success of law enforcement personnel and offenders.

The effect of nonconscious mimicry also goes beyond casual interactions with strangers and confederates in experimental settings. Nonconscious mimicry also has an effect on the rating, liking and smoothness of interaction with potential and actual romantic partners. Farley (2014) used nonconscious mimicry to measure how nonverbal behaviors were associated to romantic interests. In this study, the importance of nonconscious mimicry is examined in the lack thereof, as interacting with attractive individuals may pose a threat to those who are in existing and satisfying romantic relationships.

Heterosexual men participated in the Farley (2014) study where they were interviewed by a young attractive female. During the interview, the target behavior was touching their own head. The female experimenter also participated in non-verbal flirting gestures, such as leg-crossing in the direction of the participant. There were four hypotheses observed in this study. The first was that single participants or those in relationships lasting three months or less would engage in mimicking more than those who had been in relationships longer than three months. This proved to be true, but not to a significant degree. However, men who were in exclusive relationships did not touch their heads as much as single men. Men who were in non-exclusive relationships also smiled more than exclusive men.

In support of hypothesis two, men who reported having more romantic interest in the female experimenter mimicked more. Men who reported loving their spouses more mimicked less as well as those who reported having more passionate relationships which supported hypothesis three (Farley, 2014). Men who reported more love and compassion in their relationships would show a negative correlation for mimicry. In the final hypothesis, participants in exclusive relationships were expected to rate the confederate in a less favorable manner than

those who were not. The results proved this to be true as those in non-exclusive relationships rated the confederate higher than those in exclusive relationships.

This shows that the absence of mimicry serves as a social function just as much as the presence of mimicry does. The absence of mimicry served as an indication and confirmation of interest in a female confederate for men who were and were not in exclusive relationships. Mimicking is an action that is taken when one feels that there is a threat to acceptance. In this situation, the absence of mimicry was a way to protect an existing romantic relationship, by refraining from mimicking behavior which would result in more liking by the female experimenter. For men who participated in mimicry to a lesser degree, the female confederate was perceived as a threat to their relationship, resulting in less mimicking behavior

Nonconscious mimicry has an adaptive function of building rapport and liking. Factors such as exclusion, failure to affiliate and affiliation-goal-oriented behavior effect the degree to which an individual will engage in mimicry. These factors encourage one to participate in mimicry once they have perceived a threat to social acceptance or find it vital to belong to a particular group. The degree to which one is mimicked also affects the liking, smoothness, perspective taking and empathizing of others. Mimicry also effects social interaction beyond immediate interaction partners and affects the physical closeness and pro-social behavior such as willingness to help others. Being mimicked promotes the likelihood that one will sit closer to others in social setting as well as exhibiting prosocial behavior by helping others.

Research shows that immediate interaction partners do not have to have rapport built for mimicry to occur (Lakin et al., 2008), nor does there have to be a goal attached (Lakin & Chartrand, 2003). There is empirical evidence that nonconscious mimicry does serve a positive purpose of promoting pro-social behavior and positive social interactions (Ashton-James et al.,

2007). From an evolutionary perspective, social exclusion posed a threat to one's survival. Today, the survival of viewpoints, organizations, and companies depend heavily on shared perspective as well as the relationships that make-up the corporations. Many interviews are conducted face-to-face, even though applicant qualifications may carry greater weight for the position. However, knowing the effect that mimicry has on social interaction, the interview is vital to evaluation and liking of the applicant as a whole.

There is also a perceived threat for romantic relationships where the lack of mimicry serves an adaptive function (Farley, 2014). An individual who perceives someone to be a threat to their relationship may refrain from engaging in mimicking behavior as it encourages liking of interaction partners. The lack of mimicry also speaks for the intention of individuals and can serve as in indication of status and overall satisfaction in an exclusive relationship. This proves that the lack of mimicry or acknowledging of non-verbal gestures can and may be perceived as a lack of interest and rejection if one intends to discourage liking with.

However, there are also dangers associated with mimicking. If one participates in mimicking a negative behavior it could tarnish reputation, likability and others perception of the persons abilities. There is also danger in the target behavior or perspective being negative which in turn could encourages anti-social behavior and discourage prosocial behavior. There also stands the danger of someone noticing that they are being mimicked. If a person feels that they are being mimicked to a recognizable degree, they may not appreciate the gestures and questions how genuine one's character is. In terms of exclusion, knowing that the effects of mimicry and exclusion carry over into social interaction, an initial instance of exclusion will have a lasting effect on social interactions.

Chapter 2: Current Study

Current Study

Previous research explored the effect that mimicry had on individuals who were strangers, both in the instance of hypothetical and actual interaction with confederates in an experimental setting. However, continued search of literature is necessary in order to find the frequency and degree that mimicry persists with continued interaction of the same interaction partners, in the instance that it in fact continues. These studies mainly included participants who were over the age of 18. Further research is necessary to explore the effects, if any, that mimicry has on social exclusion and pro-social behavior over the life span.

The purpose of the current research is to gain insight on the effect that mimicry has on recall as a result of rapport building. Individuals in the mimicry condition should recall a greater number of accurate details than participants in the non-mimicry condition due to being more comfortable reporting. Ancillary hypotheses are made about Need to Belong and Interpersonal Expectancies. Need to Belong is a construct that reflects how motivated a person is to form social connections. Interpersonal expectancies reflect how optimistic a person is about other people's motives and behaviors. The Need to Belong and Interpersonal Expectancy scales may moderate the effect of mimicry. People high in need to belong and interpersonal expectancy may be more sensitive to mimicry and may show more improvements in recall.

Method

Participants

Undergraduate students at the University of Central Oklahoma were eligible to participate for partial fulfillment of a course requirement. Participants were recruited using Sona

Systems. A total of 71 participants participated in the study, ages ranging from 18 to 57, with

56.3% of participants being White, 16.9% Hispanic, 12.7% Black with Asian and American

Indian both contributing 7% to the total. Males made up 26.9% of the sample and females made

up the remaining 70.4%.

Design

The experiment had two conditions, mimicry and no mimicry, to which participants were

randomly assigned. The independent variable was mimicry. The dependent variable was the

degree of accurate recall.

Materials

The video presented to participants lasted a duration of 00:1:40 (Appendix A). The video

captured a shootout between two African American males that occurred at an Atlanta, Georgia

service station. The video was presented on an HP Windows 10 14" Laptop (Jet Black-14-

BW012NR), with brightness 75, contrast 50, red 100%, 1280x1024 resolution and 50/60Hz

refresh rate. Each participant recorded their responses to the Need to Belong (NBS) and

Interpersonal Expectancy Scales (IES) using paper copies of the scales.

Need to belong. The Need to Belong Scale (NBS; Leary, Kelly, Cottrell, &

Schreindorfer, 2013) is a 10-item Likert-type scale used to measure an individual's need

to belong in society (Appendix B). It is measured on a 5-point scale from 1 (disagree

strongly) to 5 (strongly agree). The NBS measures general acceptance, (e.g., "If other people

don't seem to accept me, I don't let it bother me," "I have a strong need to belong," and "It

bothers me a great deal when I am not included in other people's plans.") Three items will be

reverse-scored, with higher scores indicating greater NBS (Brown & Sacco, 2017).

Interpersonal expectancy. The 24-item Interpersonal Expectancy Scale (IES) (Appendix C) measures interpersonal expectancies (Mather, & Mather, 2009). The scale includes items such as, "Few people are capable of true compassion" and "When I meet people, I usually expect that they will be friendly." Participants respond using 6-point Likert-type scales (1 = Strongly Disagree; 6 = Strongly Agree) with higher scores indicating participants thinking more highly of others.

Procedure

Two different interviewers were used to collect data. Both interviewers were matched for age, gender and ethnicity. Upon arrival to the laboratory, participants were randomly assigned to one of two conditions (mimicry or no mimicry). Participants were led into a room by the experimenter and seated at a right angle to the interviewer as this seating style (Appendix E) has produced less anxiety and lower heart rates (Osato & Ogawa, 2003). This particular seating style was also chosen to avoid the interview resembling an interrogation in which the interviewer and interviewee sit directly across from each other with the interviewee furthest from the door. Both chairs were of the same size and style. The chairs had straight backs, no wheels and were slightly facing each other as suggested by Crumbley (2017). The experimenter was then seated and gave instructions on informed consent as well as read the instructions of the experiment to the participant. Following instructions from the student experimenter (Appendix F), participants were given the opportunity to ask questions. Once questions had been asked, the experimenter started the video.

In the video, an African American male exits the service station and is approached by another African American male as he is walking to get in his car. As he reaches the rear of his car the man who approached him is behind him as he opens the front driver side door to his car

(Black Dodge Charger). He retrieves a firearm from the vehicle and turns around to face the rear of the car where the man is standing. The second man then crouches down and crawls from the rear of the car to the passenger side of the car where he lays on his back while the owner of the vehicle points the gun downward at him from the rear of the car. The man on the ground gets to his feet and runs away from the store. As he does he opens fire on the owner of the vehicle that is now standing on the passenger side of the vehicle. This sparks a shootout between the two men, which results in the female passenger of the car and the second man being injured.

At the end of the video, the experimenter closed the video and begin conducting an interview, instructing participants to recall the video in as much detail as possible. The same interview questions were used in each condition (Appendix G). Details of the video were asked in the form of open-ended questions to avoid suggestibility and leading participants answers.

During the interview, the experimenter mimicked the nonverbal gestures and posture of participants who are randomly assigned to the mimicry condition and refrained from mimicking the behaviors of participants who are assigned to the no mimicry condition by maintaining a neutral and upright posture and limiting movements of the hands and feet. When participants performed any small hand or foot movements, the experimenter would wait a minimum of 3s before mimicking the behavior of the participant. Experimenters were trained in behaviors related to proximity and posture, specifically foot shaking and hand movement (Appendix H) and instructed to behave in a neutral manner (Casa De Calvo, 2007). Eye contact and smiling were independent of mimicry; therefore, the experimenter was not instructed on smiling and eye contact. Chartrand and Bargh (1999) found that when confederates made no eye contact and maintained a neutral face, participants rated the interaction and interviewer more highly than those who were not mimicked. While the participants responded, the experimenter took notes,

not exceeding two details per note and two notes per response. The note taking was limited to

allow the experimenter to mimic as often as possible. Additionally, the interviewers did not

interrupt while the participants were responding. All interview sessions were conducted face-to-

face. Half of the participants completed the Need to Belong Scale (NBS) (Appendix B) and the

Interpersonal Expectancy Scale (IES) (Appendix C) before the interview and the other half

completed the scales after the interview to counterbalance the presentation of the scales and

minimize primary affects.

Following the completion of the interview, the experimenter will begin funneled

debriefing (Appendix J) (Casa De Calvo, 2007). The debriefing began with asking general

questions about the experiment and sharing the importance of confidentiality of details to

minimize threats to internal validity.

Results

Statistical analyses were conducted to examine the difference in the accuracy of details

reported by participants in the mimicry and no mimicry conditions. One experimenter collected

data for 69 participants and the other experimenter collected data for 2 participants. An index of

accuracy was computed by combining several variables and totaling their value. A new variable

was created for number of people that participants thought were in the video which received a

value of 0 for incorrect and 1 for correct. So, if participants chose 8 for the number of individuals

in the video, they received a 1 to reflect having that one detail correct. The video gender and race

variables were coded the same way, so participants received a one for each detail that they got

correct. The weapon and vehicle variables were coded to reflect the number of details that the

participant got correct. The number of weapons that participants guessed was recorded and they

received a point for each weapon that they got correct, which is the same for number of vehicles.

The new variable 'accuracy' was computed by combining the correct number of details participants guessed for people, race, gender, weapon and vehicles. The accuracy variable is the sum of points that participants received for being accurate on each variable.

A one-way Analysis of Variance (ANOVA) and Analysis of Covariance (ANCOVA) were conducted to compare the number of accurate details recalled by participants in the mimicry condition and no mimicry condition. The one-way ANOVA revealed no statistically significant differences in the accuracy of details recalled for participants in the mimicry and no mimicry condition, $F(1, 69) = .037$, $p = .848$, observed power = .054. Two ANCOVAs were conducted to examine the Interpersonal Expectancy Scale and Need to Belong Scale as covariates of the effect that condition had on recall accuracy. There was no statistical significance found for condition controlling for IES, $F(1, 68) = .042$, $p = .838$, observed power = .055 or controlling for NBS, $F(1, 68) = .257$, $p = .614$, observed power = .079.

Another two ANCOVAs were conducted to examine similarity and likability as covariates of the effect that condition had on recall accuracy. There was no statistical significance found for controlling for similarity $F(1, 68) = .020$, $p = .888$, observed power = .052 or likability $F(1, 68) = .029$, $p = .866$, observed power = .053.

The results indicate that mimicry had no significant effect on participants ability to recall details or the accuracy of details recalled nor did it effect participants perceived similarity or liking of the experimenter.

Discussion

An ANOVA and four ANCOVAs were conducted to examine the difference in accuracy of details recalled, similarity and likability between the two conditions and no statistically

significant differences were found. These results offer insight into the limitations and implications of this study.

While conducting the interview, participants would shift their gaze often to think about the answers to their questions and may not have had many opportunities to pick up on the subtle mimicking of the experimenter even though the open body posture presented the experimenter with many opportunities to mimic the participants during the interview.

Because mimicry can occur in verbal and nonverbal methods, there must be an emphasis placed on the way in which mimicry will take place so that it will take precedence over variations and mimicking in another form.   In the Chartrand and Bargh (1999) study, eye contact and smiling had an effect on the mimicking behavior of participants which proved that mimicking goes beyond physical gestures to facial expressions (Smith-Genthôs et al., 2015). Participants may be giving far more attention to facial expression than body language. In this study smiling and eye contact were not considered, and the experimenter was trained to behave in a neutral manner, but facial expression and smiling may have differed between participants.

In terms of presentation of the video, embedding the video using screen capture software to avoid the reading of the title or abrupt closing of the laptop would have been beneficial. This would have ensured that the entire duration of the video was watched without compromising details of the content of the video. Embedding the video using screen capture software would have also reduced the possibility of the experimenter potentially being a distraction due to watching the video along with the participant to ensure the confidentiality of insight on the video's content. The video footage may have also made it difficult to gather details from the video as it was surveillance video recorded from a second monitor and without audio. Presenting

a video that was recorded directly from a device and with audio may have made it easier to pick up on details.

Presenting the participants with shocking or unexpected video footage is important for real life application as witnessing a crime is often unexpected. The order of interviewing also resembles real world application as investigators do not have the opportunity to build rapport with witnesses prior to interviewing. In addition, witnesses may very well engage in the same behaviors in actual investigative interviews such as shifting their gaze. The study may have yielded different results if the list of specific questions would have been replaced with free recall. This may have given greater insight to the number of details that participants were able to recall without the questions being of assistance.

Having blind coders rate mimicry behaviors in video recordings of the interviews would have provided a manipulation check. Due to the desire to complete this project by a certain date and the availability of coders, the manipulation check did not take place for this study. However, the sessions were recorded, and a manipulation check could be conducted in the future. A manipulation check for this coding was developed (see Appendix D). The absence of a manipulation check is a major way that this study differs from those in the literature review (Chartrand and Bargh, 1999; Lakin and Chartrand, 2003; Smith-Genthôs et al., 2015).

Potential threats to internal validity include exposure. For example, some participants had to have the video restarted as it was not embedded. We failed to assess if participants had seen the video prior to the study which is a regret to design and should be included in future studies. Instrumentation may have also been a threat, as two experimenters conducted the interviews. In future studies it is important to exclude a second experimenter as the skill level of the experimenters may be different and effect the outcome of the interview.

Conclusion

This study reflects the difficulty of defining and measuring rapport. In opposition to existing literature in the area of nonconscious mimicry and rapport building, the results were not supportive of rapport or recall increasing with the presence of mimicry. The results, though not desired, offer insight into the ways in which video/audio reviewing as a manipulation check may contribute heavily to perceived differences in mimicry for individuals being mimicked and for those who are not being mimicked.

This piece of literature lends itself to the intersection of two disciplines, forensic science and psychology, with potential to help improve investigative and interrogation techniques. It is suggested that future researchers contribute a greater amount of time to developing ways to better measure rapport and isolate the form of mimicry that most takes place in day-to-day interactions. Developing and implementing valid and reliable self-report measures to assess rapport from the perspective of the participant will also be important to compare to raters' perception, which was absent from this study. Comparing raters' perception and participants self-report will allow for further research to compare the actual and perceived increase in liking and rapport as opposed to observation alone.

This insight will prove valuable if subtle and contextually appropriate forms of mimicry can be implemented in investigative and interrogation techniques with the potential to reduce the tension involved in the investigative process and increase trust and rating of law enforcement interaction.

Making the results available for peer review will allow others to expand on my findings. This will contribute to building a framework for interviewing witnesses, victims and suspects.

Increasing accurate recall will aid in solving crimes and encourage confessions.

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Appendix A

Video Link

https://www.youtube.com/watch?v=GhLSj30MOv8

http://www.cnn.com/videos/us/2016/08/24/atlanta-gas-station-shootout-dnt.wsb

In the video, an African American male exits the service station and is approached by another

African American male as he is walking to get in his car. As he reaches the rear of his car the

man who approached him is behind him as he opens the front driver side door to his car (Black

Dodge Charger). He retrieves a firearm from the vehicle and turns around to face the rear of the

car where the man is standing. The second man then crouches down and crawls from the rear of

the car to the passenger side of the car where he lays on his back while the owner of the vehicle

points the gun downward at him from the rear of the car. The man on the ground gets to his feet

and runs away from the store. As he does he opens fire on the owner of the vehicle that is now

standing on the passenger side of the vehicle. This sparks a shootout between the two men,

which results in the female passenger of the car being injured.

Appendix B

Need to Belong Scale

Instructions: For each of the statements below, indicate the degree to which you agree or disagree with the statement by writing a number in the space beside the question using the scale below:

1 = Strongly disagree
2 = Moderately disagree
3 = Neither agree nor disagree
4 = Moderately agree
5 = Strongly agree

_____ 1. If other people don't seem to accept me, I don't let it bother me.

_____ 2. I try hard not to do things that will make other people avoid or reject me.

_____ 3. I seldom worry about whether other people care about me.

_____ 4. I need to feel that there are people I can turn to in times of need.

_____ 5. I want other people to accept me.

_____ 6. I do not like being alone.

_____ 7. Being apart from my friends for long periods of time does not bother me.

_____ 8. I have a strong need to belong.

_____ 9. It bothers me a great deal when I am not included in other people's plans.

____ 10. My feelings are easily hurt when I feel that others do not accept me.

Appendix C

Interpersonal Expectancy Scale

Please answer the following questions by circling the number that best represents your answer.

IES

1. Most people will live a healthy and active life.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

2. Few people are capable of true compassion.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

3. When I meet people, I usually expect that they will be friendly.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

4. People are often insensitive to the needs of others.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

5. People will usually treat others with respect.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

6. People will generally help others in need.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

7. People typically have good intentions toward others.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

8. Most people will do whatever they can do to avoid hard work.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

9. If people can mess things up, they generally will.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

10. Most people will cheat to get ahead.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

11. People can be trusted
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

12. Most people live by the "golden rule" (treat others as you would like to be treated).
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

13. Most people will live the lifestyle they have always wanted.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

14. People will often tell lies if they can get away with it.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

15. People cannot be relied on to keep their promises.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

16. Most people will strive to be fair.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

17. Most people will blame others for things that go wrong.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

18. People have trouble being faithful to others.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

19. People are generally capable of achieving their goals.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

20. I expect most people I meet to be bright, intelligent, individuals.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

21. Most people will take advantage of others if they get the chance.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

22. Most people will deliberately say or do things to hurt you.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

23. Most people do not really care what happens to others.
Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

24. Most people are likely to succeed in reaching their goals.
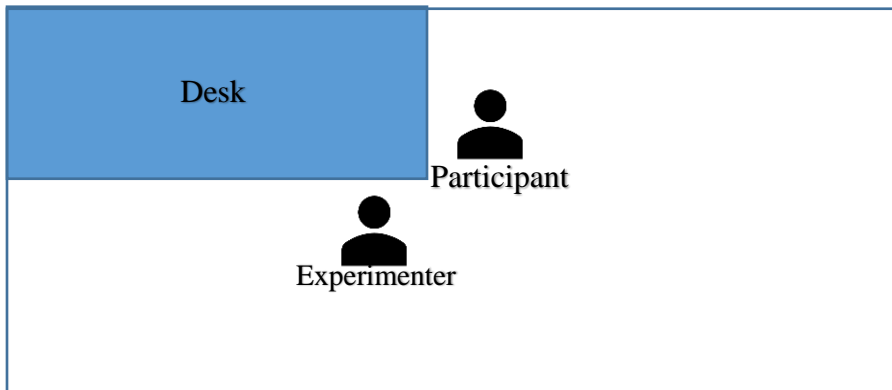 Strongly Disagree- 1   2   3   4   5   6   -Strongly Agree

Appendix D

Raters Perception of the Participant

Please rate the participant on the following traits or characteristics.

	Poor			Good			Excellent
Competence	1	2	3	4	5	6	7
Intelligence	1	2	3	4	5	6	7
Nervousness	1	2	3	4	5	6	7
Enthusiasm	1	2	3	4	5	6	7
Warmth	1	2	3	4	5	6	7
Friendliness	1	2	3	4	5	6	7
Interest	1	2	3	4	5	6	7
Attentiveness	1	2	3	4	5	6	7
Comfort	1	2	3	4	5	6	7
Confidence	1	2	3	4	5	6	7

Appendix E

Scale of Room

Appendix F

Experimenter Script

Hey, are you here for the Eyewitness Memory study?

Thank you for coming.

Please make sure that your phone is on silent. Once you have done that, you may place your belongings

over there and follow me.

(In the experiment room)

Instruct the participant to please have a seat

I have a consent form for you to read and sign if you don't mind.

This will be yours to keep, and we will also need you to sign this form for our records.

Experimenter will be seated

This experiment will take approximately 60 minutes.

Do you have any questions?

Appendix G

Interview Questions

- Did the video play in entirety?

- Did it play in color or black and white?

- Was there any audio/sound?

- How many people were in the video?

- What was the race of each individual in the video?

- What was the gender of each individual in the video?

- Describe what the people were wearing.

- Were there any weapons? (If yes)

    o What kind of weapon was present?

    o Who had a weapon?

- Were there any vehicles in the video? (If yes)

    o What kinds of vehicles?

Appendix H

Confederate Training Scripts (Modified from Casa de Calvo, 2007)

Hand Movement

By "hand movement", we mean any hand or wrist movement that is engaged in without some kind of ultimate purpose. So, by this definition, someone who changes their posture, moves their hair, adjusts their shirt, etc., is *not* engaging in hand movement. **However, any other hand or wrist activity constitutes hand movement.** You will need to pay careful attention to the hand and wrist movements of the participants during the interview: some of their movements are ***very*** subtle. Additionally, sometimes participants' hands are blocked either partially or completely. In this circumstance, focus solely on the wrists/lower arms of the participants when trying to gauge movement.

Foot Shaking Script

By "foot shaking", we mean any ankle or foot movement that is engaged in without some kind of ultimate purpose. So, by this definition, someone who changes their posture is *not* engaging in foot shaking. **However, any other foot or ankle activity, regardless of whether the participant has his/her feet on or off the ground, constitutes foot movement.** You will need to pay careful attention to the foot and ankle movements of the participants during the interview: some of their movements are ***very*** subtle. Additionally, sometimes participants' feet are blocked either partially or completely by the interviewer. In this circumstance, focus solely on the ankles of the participants when trying to gauge movement.

Appendix I

How similar was the interviewer to you?

Not at all   Very

0   1   2   3   4   5   6   7

How likable was the interviewer?

Not at all   Very

0   1   2   3   4   5   6   7

3. How old are you (in years)?

4. Which of these best describes your gender?

☐   Male
☐   Female
☐   Other/neither

5. Which of these best describes your racial/ethnic background? Choose the group with whom you identify most.

☐   White, non-Hispanic
☐   Black or African American
☐   American Indian or Alaska Native
☐   Native Hawaiian or Pacific Islander
☐   Asian
☐   Hispanic or Latino/a
☐   Other

Appendix J

Funnel Debriefing

Interviewer initiates first step of debriefing

So, how did the interview go?

Do you feel OK about it?

Once the participant has reported not being negatively affected by the experiment, the experimenter will move on to more specific questions about the study and note participant's response.

Please complete these and the experimenter will be with you shortly to complete the study.

Interviewer will give the participant the final surveys to complete and will exit room

Experimenter returns and completes the debriefing

a) Are you wondering anything about this experiment, or do you have any questions about it?

b) What did you think this experiment was about?

c) Did any part of this experiment seem strange to you, or were you suspicious of anything?

d) Did anything about the interviewer's behavior seem strange to you?

e) If yes, how?

Thanks for participating!

Since we'll be running this experiment until Summer 2018, we would greatly appreciate it if you would not tell others about it. If people come into this experiment

knowing what they will be doing and what we are looking for, it can affect how they

respond, even if they don't mean for it to. Thanks for your help in keeping things

confidential – we really appreciate it!

We are studying the relationship between nonconscious behavioral mimicry and individual's

ability to recall details. Previous research shows that people can sometimes

imitate the physical behaviors or mannerisms of other people without even being aware

that they're doing so. People have also been shown to be particularly likely to imitate the

behaviors of others when they are trying to get others to like them (in other words, to

build affiliation). It has also been supported that mimicry creates a more comfortable interview

environment.

So, we placed you in an interview situation, where you were either mimicked or not mimicked

by the experimenter. The experimenter was trained to behave in a neutral manner and to mimic

specifically foot shaking and hand movements. We are interested in seeing whether or not the

experimenter mimicking you affected your ability to recall details.

If you have any questions, please ask the experimenter before you leave. Again, thank

you for your help!