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Affiliative social tuning reduces the activation of prejudice

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Abstract

Past research on affiliative social tuning has shown that individuals who experience affiliative motivation toward another person come to exhibit implicit prejudice consistent with the apparent beliefs of that person. The present research seeks to elucidate the mechanism by which such malleability occurs. Is it interpersonally cued cognitive control, consistent with dual-process models of prejudice regulation, or a contextual change in automatic associations, consistent with shared reality theory? QUAD modeling of participants' responses revealed that affiliative social tuning of implicit prejudice was solely a function of changing associations (Studies 1–3). Furthermore, instructions to try to inhibit prejudice within a particular interpersonal context did not yield implicit attitude change (Study 2).

Keywords

affiliation, implicit prejudice, process-dissociation procedures, shared reality theory, social tuning

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> Most people are other people. Their thoughts are someone else's opinions.
>
> Oscar Wilde (*De Profundis*, 1897/1996)

People exhibit an astounding facility to flexibly adjust how they behave, what they believe and feel, and even who they are in the company of other people. Through processes of behavioral mimicry, the head nods, pencil twirls, and body posture of the people with whom we interact become our own actions (Chartrand & van Baaren, 2009). We adopt the moods of those around us, with the result being that our current feelings are often originally someone else's (Hatfield, Cacioppo, & Rapson, 1994; Huntsinger, Lun, Sinclair, & Clore, 2009). How we view ourselves is commonly a reflection of the immediate social context in which we find ourselves, in particular how other people view us, rather than a static, internally generated evaluation of our own character (Baldwin, 1992; Cooley, 1902; Hinkley

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& Andersen, 1996; Mead, 1934; Sinclair, Huntsinger, Skorinko, & Hardin, 2005).

Most relevant to present purposes is the finding that people's responses on measures of implicit ethnic prejudice fluidly adapt to the immediate social context (Lowery, Hardin, & Sinclair, 2001; Sinclair, Lowery, Hardin, & Colangelo, 2005). Research by Sinclair, Lowery and colleagues (2005), for example, showed that White participants displayed less automatic prejudice when they desired to affiliate with an interaction partner presumed to have egalitarian beliefs than those without such a desire (Sinclair, Lowery, et al., 2005). This result is consistent with shared reality theory (Hardin & Conley, 2001; Hardin & Higgins, 1996), which emphasizes that one way people seek to realize their desire to affiliate with others is to allow their attitudes to spontaneously adjust or "tune" toward the apparent beliefs of individuals with whom they are interacting.

The purpose of the present project is to illuminate the mechanism behind such interpersonal regulation of implicit prejudice. Though initially thought to be process pure, performance on measures such as those used to capture implicit prejudice actually reflect a complex blend of automatic and controlled processing (Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005; Payne, 2001, 2005).

According to shared reality theory, interacting with an ostensibly egalitarian partner causes individuals to assume the partner's egalitarian attitudes as their own. Thus, it suggests affiliative social tuning reflects contextual change in the automatic activation of prejudice. This prediction is also consistent with models of socially situated cognition (Smith & Conrey, 2009; Smith & Semin, 2004) which emphasize that all mental representations are context-sensitive reconstructions that are situated in particular interpersonal moments. In addition, it is consistent with the idea that coordination within dyads and small groups was central to human survival (Caporael, 1997; Dunbar, 1993). As humans are relatively weak and characterized by an extended infancy, they needed the protection, resources, and knowledge of those around them for their survival. It stands to reason, then, that a tendency to quickly and effortlessly adapt oneself to the surrounding interpersonal environment would have developed. Indeed, dyadic and group coordination would be unduly demanding and inefficient if such attempts at interpersonal adaptation were slow and effortful. From this perspective, then, modification of implicit prejudice via social tuning should result from a relatively effortless contextual adjustment in immediate attitude representations (i.e., prejudicial associations).

However, other research and theory suggest the possibility affiliative social tuning reflects self-regulation of activated biases. That is, interacting with an ostensibly egalitarian partner evokes attempts on the part of individuals to compensate for their automatic impulses in order to appear unbiased. Such a possibility is consistent with dual-process models of prejudice (Crandall & Eshleman, 2003; Devine, 1989; Devine & Monteith, 1999; Monteith & Mark, 2005; Monteith, Mark, & Ashburn-Nardo, 2010; Plant & Devine, 2009) which emphasize the application of controlled processing to overcome the influence of automatically activated prejudice on overt responses. This possibility is also consistent with classic and modern theories of prejudice, which propose that people actively manage their expression of prejudice to conform to prevailing egalitarian social norms or local interpersonal demands (e.g., Allport, 1954; Crandall & Eshleman, 2003; McConahay, 1986; Sears & Henry, 2005). From this perspective, then, modification of implicit prejudice via social tuning should result from suppression of activated biases, rather than a change in their activation.

If affiliative social tuning occurs solely via changes in association activation as shared reality theory predicts, it will be unique among implicit prejudice reduction strategies in its avoidance of cognitive control. Group-based differences in implicit stereotyping and prejudice are generally attributed to differences in cognitive control. Evidence indicates young adults have lower implicit prejudice than older adults because they are better able to overcome their activated associations (Gonsalkorale, Sherman, & Klauer, 2009;

Stewart, von Hippel, & Radvansky, 2009). This is also the case with intoxicated people compared to sober people (Bartholow, Dickter, & Sestir, 2006). Most prejudice reduction techniques also involve cognitive control to some degree (Amodio, Devine, & Harmon-Jones, 2008; Amodio et al., 2004; Gonsalkorale, Sherman, Allen, Klauer, & Amodio, 2011; for reviews see Gonsalkorale, Sherman, & Allen, 2010; Sherman, 2009). Presenting African Americans in a positive context (i.e., church) as opposed to a negative one (i.e., prison) elicits lower implicit prejudice because the positive context inspires greater control over one's prejudicial associations (Allen, Sherman, & Klauer, 2010). Cognitive retraining (Sherman et al., 2008) and internal motivation to control (Gonsalkorale, 2011) have their effect via a combination of automatic and controlled processes. We are aware of only two previous instances in which implicit ethnic attitudes were modulated solely via shifts in underlying associations: the effect of exposure to positive Black exemplars (e.g., Martin Luther King) on implicit prejudice (Gonsalkorale, Allen, Sherman, & Klauer, 2010) and employment of counterstereotypic implementation intentions on implicit stereotyping (Stewart & Payne, 2008).

In the present research we employed two strategies to disentangle the two possible ways affiliative social tuning might regulate implicit prejudice. One strategy was to take advantage of recently developed multinomial modeling techniques. Behind these techniques is the idea that qualitatively distinct and independent processes can simultaneously contribute to behavior on a given task. They compare responses to instances in which these processes (e.g., automatic association activation and ability to overcome such activated associations) are likely to work in concert to those in which they are likely to work in opposition in order to estimate the relative contribution of each to performance in a given task.

For theoretical reasons, we chose the quad model as our multinomial processing model (Conrey et al., 2005; Sherman et al., 2008). This model parses performance on implicit or indirect measures into four process parameters, two of which are thought to be relatively more automatic, association activation (AC) and guessing (G), and two of which are thought to be relatively more controlled, detection (D) and overcoming bias (OB; see Calanchini & Sherman, 2013, for discussion and evidence regarding the extent to which each parameter captures more or less automatic or controlled processing). The AC parameter reflects the activation of associations (e.g., prejudice) from memory, the G parameter reflects a guessing bias, the D parameter reflects the ability to determine the correct response, and, finally, the OB parameter reflects the likelihood that activated associations are successfully overcome when they conflict with detected correct responses. Thus, the AC and OB parameters most closely map onto the two mechanisms by which affiliative social tuning may regulate expression of implicit prejudice. However, because past research indicates that the D parameter is related to individual differences in motivation to control prejudice and mitigation of bias (Gonsalkorale et al., 2011), this parameter also may play a role.

Participants' affiliative motivation toward an individual thought to have egalitarian ethnic views or whose views were unknown was measured (Study 1) or manipulated (Study 3). They then completed a pro-White/anti-Black Implicit Association Task (IAT), a measure of implicit racial prejudice. It was expected that participants would exhibit less implicit ethnic prejudice on the IAT when they wanted to get along with an individual thought to hold egalitarian beliefs, consistent with previous research demonstrating affiliative social tuning. Application of the quad model to participants' responses on the IAT would then disentangle the mechanism of change. If affiliative social tuning stems from a contextual change in the activation of prejudicial associations, consistent with shared reality theory, then the AC parameter should display the same pattern of change as the IAT, and the OB and D parameters should remain unchanged across conditions. If, however, affiliative social tuning instigates an attempt to overcome or regulate the expression of prejudice, then the OB and/or D

parameters should display the same pattern of change as the IAT, and the AC parameter should remain unaffected across conditions.

The other strategy we used to disentangle the two possible ways affiliative social tuning might regulate implicit prejudice was experimental. In addition to submitting IAT responses to QUAD modeling in Study 2, we added a condition in which people received the instruction to avoid appearing prejudiced. If affiliative social tuning is due to participants controlling their bias, implicit prejudice in this condition should be similar to that in the typical affiliative social tuning condition (i.e., high motivation, egalitarian partner).

Study 1

In this experiment, participants interacted with an experimenter presumed to have egalitarian or unknown ethnic attitudes and their degree of affiliative motivation toward this person was measured. The IAT served as the measure of implicit prejudice. Consistent with past research (Sinclair, Lowery, et al., 2005), we predicted participants would display less implicit prejudice when they experienced affiliative motivation toward an egalitarian interaction partner than when they did not experience affiliative motivation toward this person. When participants interacted with a partner of unknown race-relevant beliefs, we did not expect differences in implicit prejudice as a function of affiliative motivation. To identify the mechanism underlying variation in implicit prejudice in response to affiliative social tuning, the pattern of correct and incorrect responses on the IAT was decomposed via the quad model (Conrey et al., 2005).

Method

Participants. Sixty-five White participants (35 female, 30 male) took part in this experiment for partial fulfillment of a course requirement.

Materials and procedure. Participants were greeted by an experimenter wearing a t-shirt with the word *eracism* written on it (egalitarian attitudes condition) or a blank t-shirt (control condition). They were informed that the experiment examined interpersonal interaction and attitudes toward social groups. The experimenter then told participants that they would complete several computer-based tasks, answer a series of questions, and complete a series of demographic items.

Participants were then told that prior to completing the computer-based measure they needed to complete a test of their visual acuity. When the experimenter was wearing the eracism t-shirt, the experimenter pretended to look around the room for something to use for the "eye exam." After not finding anything suitable for the eye exam, the experimenter said, "Why don't we use my t-shirt." The experimenter then instructed participants to read his or her t-shirt from three increasingly far distances. In the control condition, the experimenter had participants read a sheet of paper with a series of letters (GHBMJK) written on it.

After the visual acuity test, participants were asked to complete the computer-based measure. Participants were left alone in the room while completing the IAT and were instructed to get the experimenter when they finished. After they completed the measure of implicit prejudice, the experimenter handed them a questionnaire with a series of items measuring participants experience of affiliative motivation toward the experimenter, the perceived experimenter beliefs manipulation checks, and a series of demographic questions. Participants were then thoroughly debriefed and thanked for their participation in the experiment.

Implicit prejudice. The IAT served as the measure of implicit prejudice. It assesses the strength of associations between concepts, in this case it compares the speed with which one can pair European American + pleasant and African American + unpleasant versus European American + unpleasant and African American + pleasant. The names and words used to represent the four categories were from previous research (Dasgupta & Greenwald, 2001; see Appendix A

for names and words for each category), and the IAT was constructed following guidelines proposed by Nosek, Greenwald, and Banaji (2007). In Block 1 (20 trials), participants sorted European American and African American names, and in Block 2 (20 trials), participants sorted pleasant and unpleasant words. The order of the congruent (practice + test; 40 trials each) and incongruent (practice + test; 40 trials each) blocks was counterbalanced across participants (Blocks 3–4 and 6–7). In Block 5 (20 trials) participants again sorted pleasant and unpleasant words. Incorrect responses were met with an error message that remained on the screen for 200 ms, and participants were required to correct the error before moving on to the next trial. The intertrial interval was 200 ms (pretrial pause of 100 ms and posttrial pause of 100 ms).

Response latencies were dealt with following the recommendations of Greenwald, Nosek, and Banaji (2003) and all reported analyses used the *D-600* measure as the measure of implicit academic attitudes, with higher values on this measure indicating greater implicit prejudice. This measure exhibited good internal consistency (Spearman–Brown coefficient = .70).

Affiliative motivation. Participants answered six questions designed to measure their experience of affiliative motivation toward the experimenter (e.g., "How much do you want to get along with the experimenter"; "How much do you like the experimenter"; 1 = *not at all* to 10 = *very much*). These questions were averaged to create a composite measure of participants' experience of affiliative motivation toward the experimenter with higher values indicating greater affiliative motivation ($\alpha = .84$).

Perceived attitudes. The perceived attitudes of the experimenter were measured via two questions: "How likely is it that the experimenter believes discrimination against African Americans continues to be a problem?" and "How likely is it that the experimenter expects people to treat all ethnic groups equally?" (1 = *not at all likely* to 10 = *very likely*). The two items ($r = .38$, $p < .005$) were combined to create a composite measure of perceived attitudes with higher values indicating more egalitarian attitudes.

Results and Discussion

Preliminary Analyses

We first examined the efficacy of the experimenter attitudes manipulation. Participants believed the experimenter had more egalitarian attitudes when this person was wearing the egalitarian t-shirt ($M = 8.47$, $SD = 1.34$) than when this person was wearing the blank t-shirt ($M = 7.55$, $SD = 1.58$), $t(63) = 2.54$, $p = .014$.

Main Analyses

All hypotheses were examined via multiple regression. In the model, the outcome of interest was regressed on experimenter beliefs (egalitarian = 1; control = −1), affiliative motivation (mean-centered) and their interaction. Main effects were entered in the first step, followed by interactions in the second step.

Implicit prejudice. We predicted that, consistent with past research (e.g., Sinclair, Lowery, et al., 2005), participants' affiliative motivation toward the experimenter and whether this person was perceived to have egalitarian attitudes would interactively determine the display of implicit prejudice. As predicted participants' implicit prejudice varied as a function of their experience of affiliative motivation toward the experimenter and this persons' perceived beliefs as indicated by a significant interaction, $b = -.12(.04)$, $t(61) = 2.90$, $p = .005$ (R^2 change = .12, $p = .005$; see Figure 1). To probe the shape of this interaction simple slopes were computed (Aiken & West, 1991). Participants displayed less implicit prejudice when they experienced high affiliative motivation toward an experimenter wearing an egalitarian t-shirt than when they experience low affiliative motivation toward this person, $b = -.18(.06)$, $t(61) = 3.08$, $p = .003$. When participants interacted with an experimenter wearing

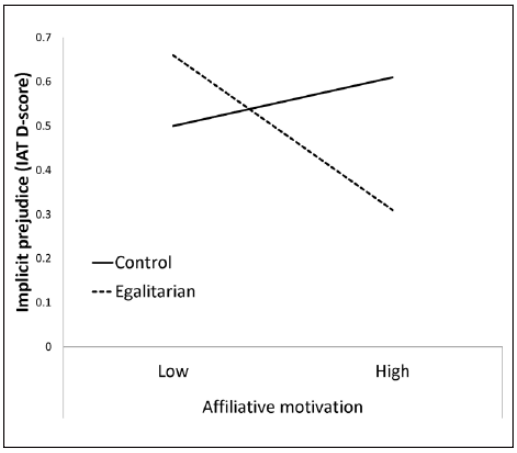

Figure 1. Implicit prejudice as a function of affiliative motivation (−1 *SD* vs. +1 *SD*) and perceived attitudes condition (control vs. egalitarian). Study 1.

the blank t-shirt, their implicit prejudice did not differ as a function of affiliative motivation, b = .06(.06), $t(61) = 1.00$, $p = .321$. Neither main effect was significant, ps > .130.

Quad Modeling

Following the specifications outlined by Conrey et al. (2005) and using an Excel sheet template available online (https://ucdavis.box.com/shared/static/94fmvkil1dz5hytiwxkf.zip), we fit the quad model to each individual participant's pattern of correct and incorrect responses on the IAT (Blocks 3–4 and 6–7; 160 trials per participant). A more detailed discussion of the quad model can be found in the Appendix. The overall error for the IAT was 5.4%. The model fit the data for 88% of the participants, and model fit was X^2 (3) = 21.08, $p = .0001$ for the entire sample. Such tests, however, are dependent on sample size with even minor perturbations leading to poor fit with large samples. Indeed, the effect size reflecting the difference between observed and predicted responses (w = .045) indicated good fit. Excluding participants with poor fit did not meaningfully influence the results reported next. Therefore all participants were retained. For each participant, we calculated the following parameters: two estimates of association activation (AC Black–bad & AC White–good), overcoming bias (OB), detection (D), and guessing (G). However, because the AC parameters were correlated, $r(65) = .47$, $p = .0001$, we present results using a single, combined index of prejudicial association activation (AC) in the main text for economy of presentation. Separate results for the individual parameters can be found in the endnotes.[1]

If affiliative social tuning changes the activation of implicit prejudice we should find that, mirroring results for the IAT, the Affiliative Motivation x Perceived Experimenter Attitudes interaction successfully predicts the AC parameters. If, however, affiliative social tuning represents an attempt to overcome bias (i.e., regulate one's implicit prejudice) we should find that the Affiliative Motivation x Perceived Experimenter Attitudes interaction successfully predicts the OB and possibly D parameters. To test which of these potential outcomes is the case, we separately submitted each of the five parameters to the same regression analyses used before.

Association activation (AC) parameters. Consistent with a shared reality theory interpretation of affiliative social tuning, the Affiliative Motivation x Perceived Experimenter Beliefs interaction successfully predicted the activation of the

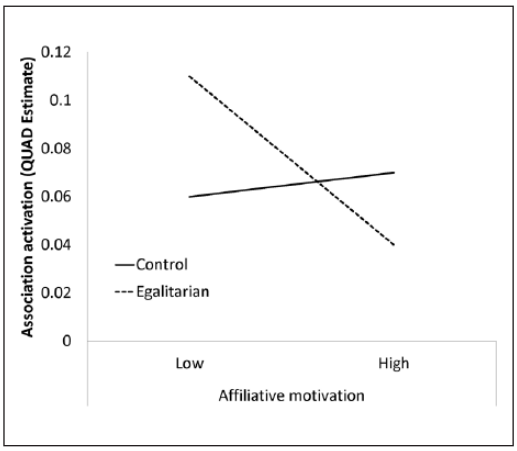

Figure 2. Association activation as a function of affiliative motivation (−1 *SD* vs. +1 *SD*) and perceived attitudes condition (control vs. egalitarian). Study 1.

combined AC parameter, $b = -.02(.008)$, $t(61) = 2.33$, $p = .023$ (R^2 change = .08, $p = .023$; see Figure 2). Simple slopes analysis revealed that prejudice was less activated when participants experienced high affiliative motivation toward an experimenter wearing an egalitarian t-shirt than when they experience low affiliative motivation toward this person, $b = -.032(.01)$, $t(61) = 2.67$, $p = .01$. When participants interacted with an experimenter wearing the blank t-shirt, the automatic activation of prejudice did not differ as a function of affiliative motivation, $b = .007(.01)$, $t(61) = 0.60$, $p = .551$. Neither main effect was significant, ps > .140.

Overcoming bias (OB) parameter. Inconsistent with affiliative social tuning reflecting an attempt to overcome activated prejudiced associations, the critical Affiliative Motivation x Perceived Experimenter Beliefs failed to significantly predict variability in the OB parameter, $b = -.02(.06)$, $t(61) = 0.35$, $p = .73$. Neither main effect was significant, ps > .150.

Detection (D) parameters. Also inconsistent with affiliative social tuning being associated with attempts to overcome associations, for the D parameter, analyses revealed only a marginally significant main effect of affiliative motivation, $b = -.02(.008)$, $t(61) = 1.88$, $p = .065$ (all other effects, ps > .30). As this parameter did not respond to the affiliative motivation manipulation in a similar way in any other experiment, this result was likely due to chance.

Guessing (G). We did not have predictions regarding variation in the G parameter. Nevertheless, we submitted this parameter to the same multiple regression analyses aforementioned. These analyses revealed only a significant, albeit theoretically meaningless, main effect of t-shirt condition, $b = -.10(.04)$, $t(61) = 2.74$, $p = .008$ (all other effects, ps > .45).

Study 2

Results of Study 1 revealed that reduction in implicit prejudice as a consequence of affiliative social tuning is due to contextual change in activation of prejudicial associations rather than attempts to overcome bias. In Study 2, we wanted to conceptually replicate these results and to examine the potential role of control within an interpersonal context in a different way. We created the experience of high affiliative motivation toward the experimenter for all participants. We also created three experimental conditions. In one condition the experimenter wore the egalitarian

t-shirt. In a second condition, the experimenter wore a blank t-shirt. In a third condition, the experimenter wore a blank t-shirt and participants were given instructions to suppress bias while completing all measures. Participants in all three conditions then completed the IAT. Thus, this design directly replicates the critical conditions in the previous experiment. In addition, it provides an experimental means of exploring whether fluctuations in implicit prejudice as a result of affiliative social tuning are associated with controlled processes or association activation. If affiliative social tuning is due to participants attempting to overcome their bias, implicit prejudice in the suppression condition should be similar to that in the egalitarian shirt condition. Further, as in Study 1, the role of activated associations versus controlled attempts to overcome bias was estimated by submitting participants' responses on the IAT to quad modeling.

Method

Participants. Forty-one White participants (34 women, 7 men) took part in this experiment for partial fulfillment of a course requirement.

Materials and procedure. Participants were greeted by an experimenter, led into the experiment room, and seated in front of a computer. For one third of participants, the experimenter was wearing an eracism t-shirt and for the other two thirds of participants, the experimenter was wearing a blank t-shirt. Then, using a procedure from Sinclair, Lowery, et al. (2005), all participants were induced to feel high affiliative motivation toward the experimenter. This manipulation involved the experimenter generously offering participants the option of taking as much candy as they wished from a large bowl. Next, participants completed the bogus visual acuity test. At this point, participants in the egalitarian t-shirt condition completed all measures described next. Participants in the blank t-shirt condition were randomly assigned to the suppression condition or the control condition. Participants in the control condition completed all measures described in what follows. For participants in the suppression condition, they were informed that they were going to be given one of several instructions about how to complete the measures in the study. They were further informed that they would randomly choose which instructions they would be given by choosing a number out of a bowl and that the experimenter did not know the nature of these instructions. Participants then chose a number out of the bowl. The drawing was rigged. Regardless of the number chosen, participants were always given the same instructions.

The instructions, borrowed from past research (Macrae, Bodenhausen, Milne, & Jetten, 1994), were as follows: "Psychological research has established that our impressions and evaluations of others are consistently biased by stereotypes and prejudices. So, you should actively try to avoid expressing any biases or prejudices while you take the computer task(s)." To keep the experimenter unaware of the nature of the instructions, participants were always given a closed manila envelope containing the instructions and were told to only open the instructions after the experimenter left the room and before they began the computer-based measures.

In all conditions, participants were left alone in the room while they completed the measure of implicit prejudice and other questions on the computer. Instructions at the end of the computer program informed participants to get the experimenter when they finished. Participants in all conditions were thoroughly debriefed, probed for suspicion, and thanked for their participation after completing the experiment.

Implicit prejudice. This measure was identical to that used in Study 1 (Spearman–Brown coefficient = .59).

Affiliative motivation. Participants answered the same six questions from Study 1 on a comparatively truncated scale (1 = *not at all* to 7 = *very much*) to measure affiliative motivation toward the experimenter ($\alpha = .96$).

Perceived attitudes. Due to a coding error, the measure of perceived experimenter attitudes from Study 1 was omitted from this study.

Table 1. Condition means from Study 2 for each outcome. Standard deviations are in parentheses.

	Automatic prejudice	Association activation	Overcoming bias	Guessing	Detection
Condition					
Tuning	0.27 (0.36)	0.03 (0.03)	0.46 (0.43)	0.60 (0.33)	0.89 (0.11)
Suppression	0.65 (0.34)	0.13 (0.12)	0.82 (0.31)	0.66 (0.48)	0.90 (0.06)
Control	0.58 (0.30)	0.10 (0.12)	0.42 (0.43)	0.48 (0.32)	0.86 (0.15)

Results and Discussion

All hypotheses were evaluated via one-way analysis of variance (ANOVA) with the following conditions: tuning (i.e., experimenter wore an egalitarian shirt), control (i.e., experimenter wore a blank shirt), and suppression (i.e., participants received the written instruction to avoid being prejudiced). Relevant means and standard deviations for the main dependent measures across conditions are reported in Table 1.

Preliminary Analyses

As expected given that all participants received the high affiliative motivation induction, participants experienced similar levels of affiliative motivation toward the experimenter across all conditions, grand $M = 4.77$, $SD = 0.69$, $F(1, 38) = 1.28$, $p = .265$. This value was significantly above the scale midpoint (4), $t(40) = 7.21$, $p < .005$.

Main Analyses

Implicit prejudice. Participants degree of implicit prejudice varied across conditions, $F(2, 38) = 5.38$, $p = .009$, $\eta^2_p = .22$. As predicted, participants displayed significantly lower implicit prejudice in the tuning condition than in the suppression instructions and control conditions, $t(38) = 3.11$, $p = .004$ and $t(38) = 2.34$, $p = .024$. The latter two conditions did not differ, $t(38) = .51$, $p = .613$.

Quad Modeling

We fit the same quad model with the same set of parameters from Study 1 to each individual participant's pattern of correct and incorrect responses on the IAT. The overall error for the IAT was 7.1%. The model fit the data for 90% of the participants, and model fit was X^2 (3) = 20.65, $p = .0001$ for the entire sample. Despite the X^2 indicating less than ideal model fit, the effect size reflecting the difference between observed and predicted responses ($w = .056$) indicated good fit. Excluding participants with poor fit did not influence the results reported next. Therefore all participants were retained. As before, because the AC (Black–bad) and AC (White–good) parameters were correlated, $r(41) = .65$, $p < .0001$, we present results using a single, combined index of prejudicial association activation in the main text. Separate results for the individual parameters can be found in the endnotes.[2] We separately submitted each of the resultant five parameters to the same ANOVA used before.

Association activation (AC) parameters. Association activation varied significantly across conditions, $F(2, 38) = 4.37$, $p = .020$, $\eta^2_p = .19$. As predicted, participants displayed at least somewhat lower activation of prejudice in the tuning condition than in the suppression instructions and control conditions, $t(38) = 2.89$, $p = .006$ and $t(38) = 1.82$, $p = .075$. The latter two conditions did not differ, $t(38) = 0.84$, $p = .406$.

Overcoming bias (OB) parameter. Attempts to overcome the impact of activated prejudicial associations also varied significantly across conditions, $F(2, 38) = 4.49$, $p = .018$, $\eta^2_p = .19$. The overcoming bias parameter was higher in the suppression instructions condition than in the tuning and control conditions, $t(38) = 2.55$, $p = .015$ and $t(38) = 2.57$, $p = .014$. The latter two conditions did not differ, $t(38) = 0.21$, $p = .834$. Thus, although the effect of the suppression instructions was not detected via analysis of response latencies, they did have an effect on IAT performance in that

they increased overcoming bias as measured via analysis of errors.

Detection (D) parameters. The D parameter did not differ across conditions, $F(2, 38) = 0.41$, $p = .666$.

Guessing (G). The G parameter also did not differ across conditions, $F(2, 38) = 1.12$, $p = .337$.

Study 3

In this experiment, both affiliative motivation and the perceived views of one's interaction partner were manipulated to provide converging evidence that affiliative social tuning does indeed shift automatic associations and rule out alternate explanations of the findings thus far. For example, given the correlational design of Study 1, it could be the case that the perceived views of the experimenter and participants' implicit prejudice interacted to predict affiliative motivation rather than the other way around. In the present experiment participants engaged in a simulated online chat with a partner presumed to have egalitarian attitudes or not and their degree of affiliative motivation toward this person was manipulated to be either high or low. The IAT served as the measure of implicit prejudice. We again predicted participants would display less implicit prejudice when they experienced affiliative motivation toward an egalitarian interaction partner than when they did not experience affiliative motivation toward this person. To identify the mechanism underlying variation in implicit prejudice in response to affiliative social tuning, the pattern of correct and incorrect responses on the IAT was again decomposed via the quad model (Conrey et al., 2005).

Method

Participants. Three-hundred thirteen (201 female) White people took part in this experiment via Mechanical Turk for $2.00.

Materials and procedure. This study employed an online chat paradigm modeled off the laboratory procedure. The chat partner was simulated to instantiate the manipulations. Participants were told that they were to participate in a study of memory for social interactions in which they would chat with another participant, the interaction would be interrupted by distractors and after the distractors they would continue the chat and be tested for their memory of the conversation. Participants were induced to be high or low in affiliative motivation through the chat style—but not content—of their ostensible partner (see Appendix B). That is, in the high affiliative motivation condition the ostensible partner communicated in a friendly, upbeat way while the partner was somewhat rude in the low affiliative motivation condition.

Prior to the beginning of the chat participants chose an avatar to depict themselves and learned that their ostensible partner (who was always gender-matched) uploaded a picture of him or herself to be his/her avatar. Both the participant's and partner's avatars were displayed throughout the exchange. Perceived egalitarianism of the partner was manipulated by having the partner wear the *eracism* logo t-shirt used in Studies 1 and 2 in the picture or not (i.e., either a blank t-shirt or t-shirt with a "Republican and Proud[3]" logo). Two waves of data were collected in sequence. The first used a partner wearing a blank t-shirt and the second used a partner wearing the Republican shirt. This change was introduced to sharpen the distinction between chat partners who were depicted as more versus less egalitarian. In the second wave of data collection, the content of the chat was also slightly altered to include a sentence to draw more attention to the partner's ostensible attitudes. Namely, the chat partner drew attention to his/her shirt logo by mentioning that the picture of him/her wearing it was taken during a rally s/he helped organize. Initial analyses revealed no significant differences between the two data collections on the primary dependent variables so we collapsed them.

After the manipulations the chat was interrupted to introduce the outcome measures: Affiliative motivation toward the partner was assessed with four of the items used in Study 1

(a = .94), the Black–White IAT used in Studies 1 and 2 (Spearman–Brown coefficient = .72), and demographics. After these measures participants were asked about the degree to which they believed their chat partner to be real using the single item, "How real was your chat partner?" answered on a 7-point Likert scale and with an open-ended suspicion probe.

Results and Discussion

Preliminary Analyses

As expected, partners who were nicer elicited more affiliative motivation (M = 5.74, SD = 1.12) than those who were rude (M = 3.79, SD = 1.52), $t(311) = 12.90$, $p < .001$. Similarly, participants believed their chat partner had more egalitarian attitudes when this person was wearing the egalitarian t-shirt (M = 5.85, SD = 1.39) than when this person was not (M = 4.75, SD = 1.78), $t(311) = 6.14$, $p < .001$.[4]

Main Analyses

All hypotheses were examined using a full-factorial ANOVA with the between participants variables, partner beliefs (egalitarian vs. not egalitarian), affiliative motivation (high vs. low) and data collection wave (first vs. second).

Implicit prejudice. We predicted that participants' affiliative motivation toward the partner and whether this person was perceived to have egalitarian attitudes would interactively determine the display of implicit prejudice. Contrary to predictions, participants' implicit prejudice did not vary as a function of their experience of affiliative motivation and their chat partners' perceived beliefs, $F(1, 305) = 0.34$, $p = .560$. Neither the main effect of partner's beliefs, $p = .906$, nor the main effect of affiliative motivation were also significant, $p = .935$. There was no main effect of, or interaction with data collection (ps $\geqslant .655$).

Although participants' degree of implicit prejudice did not vary across condition as predicted, we pursued QUAD modeling to test our main hypotheses as an absence of an effect on latency data does not preclude an effect on accuracy data. As an example, Gonsalkorale, Sherman, and Klauer (2014) found no differences in older and younger adults' implicit attitudes toward aging when measured via response latencies on the IAT. However, QUAD modeling revealed that younger an older adults showed similar IAT latency performance for quite different reasons. Older individuals showed lower negative associations to aging, but less ability to overcome these associations, whereas younger individuals showed higher negative associations.

Quad Modeling

We fit the same quad model with the same set of parameters from Studies 1 and 2 to each individual participant's pattern of correct and incorrect responses on the IAT. The overall error for the IAT was 6.8%. The model fit the data for over 95% of the participants, and model fit was X^2 (3) = 16.37, $p < .001$ for the entire sample. Despite the X^2 indicating less than ideal model fit, the effect size reflecting the difference between observed and predicted responses (w = .02) indicated good fit. Excluding participants with poor fit did not influence the results reported next. Therefore all participants were retained. As before, because the AC (Black–bad) and AC (White–good) parameters were correlated, $r(313) = .42$, $p < .001$, we present results using a single, combined index of prejudicial association activation in the main text. Separate results for the individual parameters can be found in the endnotes.[5] We separately submitted each of the resultant five parameters to the same ANOVA used before.

Association activation (AC) parameters. Association activation varied significantly as a combination of the conditions as expected, $F(1, 305) = 5.02$, $p = .026$, $\eta^2_p = .016$ (see Figure 3). Consistent with the findings of Study 1, when interacting with a seemingly egalitarian partner, participants with high affiliative motivation displayed lower activation of prejudice (M = 0.06, SD = 0.09) than did participants experiencing low affiliative motivation (M = 0.09, SD = 0.10), $F(1, 305) = 4.42$,

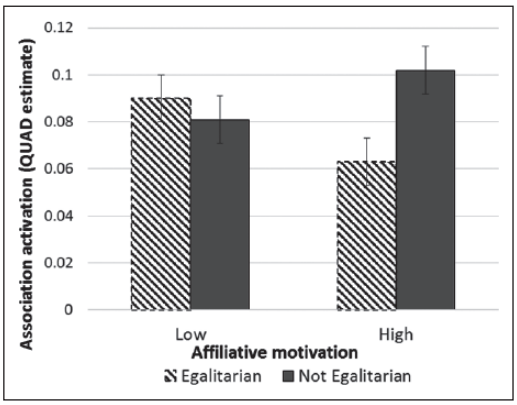

Figure 3. Association activation as a function of affiliative motivation condition (high vs. low) and perceived attitudes condition (egalitarian vs. not egalitarian). Study 3.

p = .036. There was no difference in prejudice activation for participants who interacted with a nonegalitarian partner, regardless of affiliative motivation, $F(1, 305) = 1.47$, $p = .226$. Neither the main effect of partner's beliefs, $p = .160$, nor the main effect of affiliative motivation was significant, $p = .757$.

Overcoming bias (OB) parameter. Attempts to overcome the impact of activated prejudicial associations did not vary as a combination of the conditions, $F(1, 305) = 2.45$, $p = .119$. The main effect of affiliative motivation was also not significant, $p = .318$. However, there was a main effect of partner's beliefs such that participants were less likely to try to overcome their biases when interacting with a partner who seemed to have egalitarian views ($M = 0.53$, $SD = 0.03$) than a partner who did not ($M = 0.70$, $SD = 0.04$), $F(1, 305) = 9.53$, $p = .002$.

Detection (D) parameters. The D parameter also did not vary as a combination of the conditions, $F(1, 305) = 0.46$, $p = .50$. Neither the main effect of partner's beliefs, $p = .137$, nor the main effect of affiliative motivation was significant as well, $p = .788$.

Guessing (G). The G parameter also did not vary as a combination of the conditions, $F(1, 305) = 0.23$, $p = .63$. Nor did the main effect of partner's beliefs, $p = .307$, or the main effect of affiliative motivation, $p = .977$.

Across all QUAD modeling analyses, there was no main effect of, or interaction with, wave of data collection (ps $\geqslant .259$) with one exception: There was a significant two-way interaction of Partner's Beliefs × Data Collection predicting OB $F(1, 305) = 7.49$, $p = .007$, such that the main effect of partner's beliefs was significant during the second wave of data collection $F(1, 90) = 11.487$, $p = .001$, but not the first ($p = .574$). During that data collection, participants were less likely to try to overcome their biases when interacting with a partner who seemed to have egalitarian views ($M = 0.45$, $SD = 0.05$) than a partner who did not ($M = 0.76$, $SD = 0.04$).

General Discussion

In the present research we sought to elucidate the mechanism by which affiliative social tuning of implicit ethnic attitudes occurs. According to shared reality theory, when affiliative motivation is engaged, interacting with an ostensibly egalitarian partner causes people to automatically assume this person's egalitarian attitudes as their own. That is, social tuning is thought to affect individuals' cognitive associations. This explanation contrasts with typical dual process models of attitude change which suggest that responses on implicit attitude measures change because individuals are

able and willing to exert the cognitive control necessary to overcome their automatic biases (e.g., Devine & Monteith, 1999).

All three studies supported the former mechanism but not the latter. QUAD modeling of individuals' responses on a pro-White/anti-Black IAT suggests that affiliative social tuning elicits contextual change in the activation of prejudicial associations, rather than controlled attempts to suppress or overcome the impact of activated prejudice on responses. In addition, creating a situation in which individuals were instructed to overcome bias within a particular interpersonal context, an experimental equivalent of the proposed controlled process, did not reduce implicit prejudice even though QUAD modelling suggested they tried to adhere to the instructions (Study 2). Even when we did not replicate a reduction in implicit prejudice as indexed by reaction times on the IAT in Study 3, likely due to extraneous influences brought about by a simulated, online as opposed to authentic, in-person interaction, we still found the predicted effect on automatic associations in the quad-modeled estimates.

The finding that social tuning operates via contextual change in activated associations contributes to the conclusion that it is a unique means of modulating implicit ethnic attitudes. Unlike most other prejudice reduction strategies it does not rely on cognitive control in the form of overcoming bias or response monitoring (Gonsalkorale et al., 2010). Further, it takes advantage of the fundamental desire to get along with others (Baumeister & Leary, 1995; Fiske, 2003) and does not require certain behaviors on the part of stigmatized targets, which exposure to positive exemplars, one of the very few other strategies that yields effects solely via shifts in association activation, does. Finally, there is ample evidence that interracial contact is viewed as challenging, or even threatening, to all involved (Mallett & Wilson, 2010; Mallett, Wilson, & Gilbert, 2008; Shelton & Richeson, 2005, 2006; Trawalter, Richeson, & Shelton, 2009; Vorauer, 2006). In contrast, social tuning is a means by which prejudice is regulated through *intra*racial interaction. Thus, when compared to previous work, the present findings indicate that affiliative social tuning is unique in that it does not require cognitive control or potentially awkward intergroup contact.

Future research should examine the mechanisms by which other examples of social regulation of prejudice and stereotyping, such as increasing the salience of egalitarian ingroup norms (Castelli & Tomelleri, 2008; Sechrist & Stangor, 2001; Stangor, Sechrist, & Jost, 2001), operate. On the one hand, the idea that coordination within small groups is integral to human survival suggests ingroup norms will affect implicit attitudes via changes in associations (Caporael, 1997; Dunbar, 1993). After all, relying on slow, cognitively effortful means to achieve a central human goal of coordinating with others would be impractically inefficient. On the other hand, it has been argued that the influence of ingroup norms stems from suppression of automatic negative affective responses (Crandall & Eshleman, 2003; Crandall, Eshleman, & O'Brien, 2002).

Struggling with strong prejudicial associations has been shown to contribute to poorer quality intergroup interactions (Dovidio, Kawakami, & Gaertner, 2002; Fazio, Jackson, Dunton, & Williams, 1995; McConnell & Leibold, 2001). In future research it would be important to determine if change in prejudicial associations as a consequence of affiliative social tuning results in improvement in intergroup interactions. Intergroup interactions have also been shown to have deleterious effects on subsequent cognitive function, presumably because regulating prejudice and consequent reactions during the interaction are taxing (Richeson & Shelton, 2003; Richeson & Trawalter, 2005). So it may be the case that the reduced prejudicial associations from affiliative social tuning will not only improve intergroup interactions but also mitigate their debilitating after-effects.

Throughout we have described the AC and G parameters as relatively automatic, and the D and OB parameters as relatively controlled. We think this is justified because past research has carefully

investigated the automatic and controlled nature of the parameters (see Calanchini & Sherman, 2013, for a thorough discussion of this issue). For example, time constraints reduce the D and OB parameters, suggesting that they reflect the operation of relatively controlled processing, whereas time constraints do not affect the AC parameter, suggesting that it reflects the operation of relatively automatic processing (Conrey et al., 2005). We therefore believe the current results suggest that social tuning is generally unintentional, efficient and unconscious, but perhaps not uncontrollable. Nevertheless, future research should empirically specify the nature of the processes in social tuning.

Coda

Consistent with Oscar Wilde's speculations, the present research demonstrates that our attitudes and opinions may often originate in other people. Specifically, when affiliative motivation was engaged, interacting with an ostensibly egalitarian partner caused people to adopt this person's egalitarian attitudes as their own. More importantly, this act of assuming the egalitarian attitudes of someone else was found to occur not through a process of attitudinal suppression, but rather through a process of contextual, attitudinal alignment. In contrast to other often time and resource intensive avenues to prejudice reduction, then, affiliative social tuning represents an easy street.

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Notes

1. When the AC parameters are examined separately, the affiliative Motivation X Perceived Experimenter Beliefs interactions are as follows: AC (Black–bad) = $b = -.024(.009)$, $t(61) = 2.83$, $p = .006$; AC (White–good) = $b = -.015(.011)$, $t(61) = 1.31$, $p = .195$. The simple slopes for participants who interacted with an experimenter in an egalitarian shirt are as follows: AC (Black–bad) = $b = -.033(.012)$, $t(61) = 2.68$, $p = .009$; AC (White–good) = $b = -.03(.016)$, $t(61) = 1.93$, $p = .058$.
2. When examined separately, AC (Black–bad) = $F(1, 38) = 3.06$, $p = .059$, $\eta^2_p = .14$; AC (White–good) = $F(1, 38) = 4.09$, $p = .025$, $\eta^2_p = .18$. The pattern of the means is the same.
3. Pilot testing indicated that Republicans associated with the "Republican and Proud" message were seen as less egalitarian ($M = 3.5$, $SD = 1.5$) than someone associated with the "*eracism*" logo ($M = 5.3$, $SD = 1.8$) on the key item, "On average, to what extent do people in this group value treating all ethnic groups equally?", $t(14) = 2.99$, $p = .01$.
4. The overall, original sample included 410 White participants who participated in one of the two waves of data collection. Because social tuning is considered interpersonal and requires participants to believe their online interaction is authentic and not simulated, participants who indicated that they did not believe that their chat partner was real via both the Likert-type scale and the open-ended suspicion probe were excluded from analyses. That is, if a participant reported that his or her chat partner was not real by rating him or her as "1" or "2" on the Likert-type question *and* the participant indicated that s/he believed his or her chat partner was a simulation in the open-ended response, a coder blind to condition coded that participant as not passing this manipulation check.
5. When examined separately, AC (Black–bad) = $F(1, 305) = 0.14$, $p = .712$, $\eta^2_p < .001$; AC (White–good) = $F(1, 305) = 9.76$, $p = .002$, $\eta^2_p = .031$. The simple effects for participants who interacted with a seemingly egalitarian partner are as follows: AC (Black–bad) = $F(1, 305) = 3.92$, $p = .049$, $\eta^2_p = .013$; AC (White–good) = $F(1, 305) = 2.63$, $p = .106$, $\eta^2_p = .009$.

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Appendix A

Implicit Association Task

The names and words used for each of the four categories in the IAT were as follows.

African American: Chanda, Rashan, Tameisha, Malik, Sharise, Tyrone, Tolanda, Jamal, Toshanda, Darnel.

European American: Heidi, John, Donna, Brad, Meredith, Paul, Shannon, Brian, Katie, Robert.

Pleasant: Pleasant, joy, peace, love, glory, pleasure, excitement, laughter, paradise, vacation.

Unpleasant: unpleasant, death, hatred, failure, terrible, violent, insecure, agony, destroy, bad.

Quad Modeling

The basic structure of the quad model is shown in Figure A1. Each path in the tree represents a likelihood. Parameters with lines leading to them are conditional on all preceding parameters. For example, guessing (G) is conditional on association activation (AC) and detection (D). The processing tree, and the conditional relationships depicted in the tree, form a series of equations predicting the number of correct and incorrect responses in the different blocks of the IAT (e.g., compatible versus incompatible trials). A Black target name in an incompatible trial, for example (Figure A1), will be responded to correctly with the probability: AC x D x OB + (1–AC) x D + (1–AC) x (1–d) x G. This equation is simply a sum of the three possible paths to correct responses in this situation. The first third of the equation (i.e., AC x D x OB) is the likelihood that the association between Black and unpleasant is activated *and* that the stimulus is accurately detected *and* that bias is overcome. The second third of the equation (i.e., [1-AC] x D) is the likelihood that the association is not activated *and* that the stimulus is accurately detected. The last third of the equation (i.e., [1-AC] x [1-d] x G) is the likelihood that the association is not activated *and* the stimulus is incorrectly detected *and* that the participant guesses the correct answer by pressing the "pleasant" key. Pressing this key returns a correct answer because, in incompatible blocks, "Black" and "pleasant" share the same response key. Similar sets of equations are constructed for each item category (i.e., Black names, White names, pleasant words, and unpleasant words in both the incompatible and compatible blocks). These equations are then used to predict the observed proportion of errors in a given data set, which are then compared to the actual data. Model fit is determined by calculation of an X^2 estimate for the difference between predicted and observed errors on the task. Parameter values are changed through maximum likelihood estimation until they return the smallest value of the X^2. The resulting parameter values reflect relative levels of the given process (e.g., association activation, etc.). We calculated the following parameters: association activation, detection, overcoming bias, and guessing. Higher values for the guessing parameter reflected a bias toward pressing the "pleasant" key.

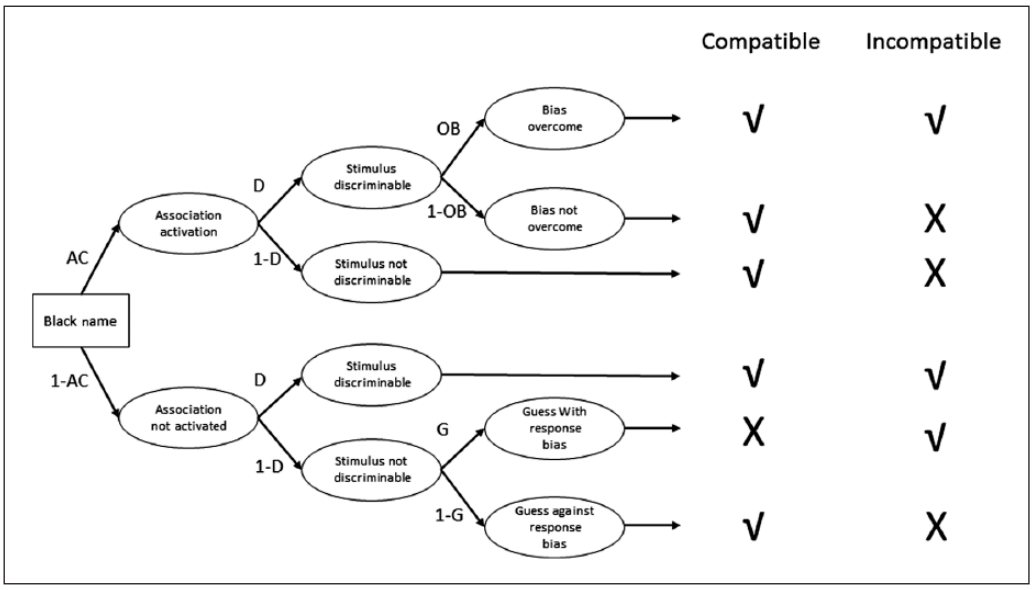

Figure A1. Processing tree representing the quadruple process model (Quad model). Each path represents a likelihood. Parameters with lines leading to them are conditional on all preceding parameters. The figure depicts correct (√) and incorrect (X) responses as a function of process pattern for a particular trial type, in this case Black names.

Appendix B

Study 3: Online Chat Content

High Affiliative Motivation

Introduction: Hi! My name is Michelle/Michael. I like reading and writing and I work at a local business. Umm… I'm not sure what we're supposed to say exactly to introduce ourselves. But I think this study could be interesting—It should be fun to talk with you!

Question 1: Nice to "meet" you! :) Hmm … okay. I wonder if you're really chatting with me … Are you? Tell me something that might be unique … like, do you have any hobbies or things you like to do for fun?

Question 2: Cool! Okay hmm, question two. I think I'm going to try to see a movie this week—there are a lot out right now. It would be great to hear your recommendations! Have you seen anything good lately?

Low Affiliative Motivation

Introduction: I'm Michelle/Michael. I like reading and writing and I work at a local business. Umm… I'm not sure what we're supposed to say exactly to introduce ourselves. I just want to finish this HIT. I think it's dumb we have to talk to each other.

Question 1: Uhh… okay. I wonder if you're really chatting with me… Are you? Tell me something that might be unique… like, do you have any hobbies or things you like to do for fun?

Question 2: Another question? I don't know… I don't really care. I think I'm going to try to see a movie this week—there are a lot out right now. I doubt it, but do you have any good movie recommendations? Have you seen anything good lately?