

Motivation and interpersonal sensitivity: Does it matter how hard you try?

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Abstract Across 11 experiments, motivation to be accurate on a test of interpersonal sensitivity was manipulated using five methods for increasing motivation (monetary incentive, ego motive, forewarning that accuracy would be tested, exhortation to try hard, and framing the interpersonal sensitivity test description to suggest that performance was gender relevant). Participants were then given an interpersonal sensitivity test consisting of interpreting the meanings of cues or recalling a target person's appearance, nonverbal cues, or spoken utterances. Neither the individual studies, nor a meta-analysis of the 11 studies, found that the motivation manipulations improved participants' accuracy on interpersonal sensitivity tests that involved the processing of nonverbal cues. However, motivation had a significant positive effect when sensitivity was defined as recall of verbal cues. There was no evidence that any of the manipulations had a differential impact on men and women.

Keywords Meta-analysis · Motivation · Interpersonal sensitivity · Accuracy · Nonverbal · Verbal · Gender

Introduction

Accuracy in processing others' verbal and nonverbal cues, in other words interpersonal sensitivity, is both an old topic (e.g., Vernon 1933) and one that has received a great deal of recent attention (Ambady et al. 2000). Most of the research is concerned with interpersonal sensitivity as an individual-difference variable and therefore documents trait correlates of such skill (for meta-analytic reviews see, for example, Hall et al. in press; Marsh and Blair 2008; McClure 2000). A much smaller literature is concerned with proximal influences such as emotion, cognitive load, judgment strategy, and motivation. The present article is concerned with the impact of motivation on tests of interpersonal sensitivity.

A number of authors have assumed that how hard a person tries has an important influence on interpersonal sensitivity (Fiske and Morling 1996; Henley 1977; Ickes et al. 2000; Keltner et al. 2003; Snodgrass 1985, 1992). Snodgrass (1985), for example, suggested that people with different degrees of social power, such as bosses and subordinates, have different levels of motivation to be accurate, which in turn produce differences in how accurately they perceive each other; and Ickes et al. (2000) suggested that the frequently found superiority of women on tests of interpersonal sensitivity (Hall 1978, 1984) may often depend on motivational factors. However, published studies on motivation and interpersonal sensitivity yield an inconsistent, often nonsupportive picture. Because of a lack

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of consensus, it is important to discuss the theoretical issues, review the past research in detail, and continue conducting new studies, such as those we report in the present article.

Should trying harder help?

There are several reasons why trying harder might not improve accuracy. First, if the task involves the utilization of knowledge about the domain in question, then the extent of this knowledge is a limiting factor. Trying harder cannot help if the perceiver does not have the requisite knowledge to draw on.

Second, it has been argued that perceivers often process nonverbal behavior in an automatic, nonconscious manner (Ambady et al. 2000; Ambady and Gray 2002; DePaulo and Friedman 1998; Patterson 1995; Tracy and Robins 2008). If increased motivation causes a person to think more closely about the judgment process, this could backfire because trying to think consciously about a non-conscious process may produce distraction, doubt, or second-guessing, all of which could impair accuracy. The fact that sadness disrupts accuracy on interpersonal sensitivity tests (Ambady and Gray 2002; Chepenik et al. 2007) supports the idea that careful nonverbal cue processing, which is associated with sad mood, can be inefficient for this kind of task. Relatedly, Patterson and Stockbridge (1998) found that approaching an interpersonal sensitivity task in an analytic manner hurt performance when participants were also under cognitive load.

Furthermore, if perceivers are not consciously aware of how they interpret expressive behavior, then they should have difficulty applying conscious processes to identifying which nonverbal cues to use (and not use) during the judgment process. Some research suggests that this is the case (Anderson et al. 1999; Driscoll et al. 1998; Hurd and Noller 1988; Meiran et al. 1994).

A final reason why trying harder might not improve accuracy is that trying harder might lead a perceiver to attend to the wrong cues. Forrest and Feldman (2000) proposed that perceivers who were highly motivated to detect deception would shift their attention to the verbal channel, which would hurt performance because the most diagnostic information for lie detection is in the nonverbal, not verbal, channel. Forrest and Feldman's hypothesis can be extended beyond the lie-detection situation to any interpersonal judgment situation in which perceivers who are trying harder to be accurate turn preferentially to the verbal channel (Hall and Schmid Mast 2007). This would lead to inaccuracy if the verbal channel is not the best source of diagnostic information.

What do experiments on motivation and interpersonal sensitivity show?

Monetary incentives

Monetary incentives significantly hurt accuracy in a study by Porter et al. (2007) and had no significant impact in five other studies (Ambady et al. 2000; Nowicki and Richman 1985). All of these studies involved the judgment of non-verbal cues. On the other hand, Klein and Hodges (2001, Study 2) found that a monetary incentive significantly improved accuracy. Importantly, Klein and Hodges' test was based on Ickes' empathic accuracy paradigm (Ickes et al. 1990), in which perceivers view a target person and guess the target's thoughts and feelings at various points when the tape is stopped by the experimenter. Accuracy consists of the match between the perceiver's guess of the target's thoughts and feelings and the target's own statements about his/her thoughts and feelings at those same points in time (which were identified during the target's post-experimental review of the videotape). What is important for the present discussion is that accuracy on a test constructed in this manner has been shown to depend far more on verbal than nonverbal cues (Gesn and Ickes 1999; Hall and Schmid Mast 2007). Therefore, one must consider the possibility that the impact of motivation is different for tests based on verbal versus nonverbal cues. This hypothesis was investigated in the studies reported in the present article.

Ego relevance

Framing performance on a test of interpersonal sensitivity as an indicator of general cognitive ability, Klein and Hodges (2001, Study 1) found no significant improvement in accuracy, whereas Forrest and Feldman (2000) found that participants in their ego-relevant condition were worse at lie detection than participants in a control condition. As noted earlier, Forrest and Feldman interpreted this result as the consequence of the more motivated participants shifting their attention to the wrong (i.e., verbal) cues. This interpretation may be equally relevant to the Porter et al. (2007) study mentioned in the previous section, which was also on lie detection. Finally, Hall and Schmid Mast (2008, Study 2) examined interpersonal sensitivity in competitive versus non-competitive conditions, a manipulation that the authors viewed as ego relevant for men. Competing improved men's (but not women's) accuracy in recalling their partner's anagram performance. Taken together, ego manipulations have had mixed impact on interpersonal sensitivity.

Gender relevance

Ickes et al. (2000) proposed that women's typical advantage on tests of interpersonal sensitivity might be due to motivational differences stemming from the stereotypically female nature of such tasks. In a meta-analysis, Ickes et al. showed that studies using the empathic accuracy paradigm found the typical gender difference only when participants were instructed to evaluate their performance following each test item. Ickes et al. (2000) argued that making such an evaluation increased the motivation of women to perform well because it highlighted the expectation that they should do well. Whether self-evaluation should be considered a motivational manipulation is unclear, but if it is, these studies are consistent with the notion that female-relevant motivation can positively influence women's performance on an interpersonal sensitivity test. However, it is important to emphasize that, as noted earlier, accuracy depends predominantly on the judgment of verbal cues in the empathic accuracy paradigm.

Klein and Hodges (2001, Study 1), also using a test based on the empathic accuracy paradigm, included two separate manipulations of female relevance (priming an empathic mindset and stating that the test measured empathic ability). Neither manipulation produced the predicted interaction of gender and motivation condition, but for both manipulations, the means showed more positive impact on women than men. Thomas and Maio (2008) similarly used a test based on the empathic accuracy paradigm, with a manipulation designed to increase women's motivation by challenging their belief that women are high in emotional intelligence. The manipulation produced higher accuracy than in a control group, but only for target stimuli that were relatively easy to judge. Thus, female-relevant manipulations have improved women's accuracy, but it needs to be stressed again that the empathic accuracy paradigm used in these studies predominantly measures sensitivity to verbal cues.

Koenig and Eagly (2005) framed an interpersonal sensitivity test (one based predominantly on nonverbal cues) as female relevant with a strongly worded manipulation that included, among other things, the statement that women typically perform better than men. This manipulation produced no improvement in women's accuracy. Men's accuracy, however, was significantly impaired by the manipulation, which the authors interpreted to be the result of stereotype threat (Steele and Aronson 1995). An impairment due to stereotype threat is consistent with other findings showing that state and trait anxiety are both negatively associated with performance on interpersonal sensitivity tests (Hänggi 2004; Schroeder 1995; Toner and Gates 1985), and that cognitive load can sometimes disrupt performance on such tests (Patterson and Stockbridge

1998; Phillips et al. 2007). The threatened person might withdraw effort, thereby performing worse, or might try harder, with paradoxically deleterious results (Jamieson and Harkins 2007; O'Brien and Crandall 2003).

Finally, Horgan and Smith (2006) framed the same interpersonal sensitivity test as gender relevant by telling participants that the skill was either pertinent to being a social worker (female relevant) or to being a Department of Defense interrogator (male relevant). There was no benefit to either gender, relative to the control group, when the task was described as stereotypic for their own gender. However, reminiscent of the Koenig and Eagly (2005) study, performance for each gender was worse relative to the control group when the task was framed as stereotypic for the other gender (note, this did not happen in the Klein and Hodges 2001, research).

In sum, manipulations designed to appeal to female stereotypes had positive, though qualified, impact on women's interpersonal sensitivity in studies that primarily measured sensitivity to verbal cues. However, in studies that measured sensitivity to nonverbal cues such manipulations had little impact. Also, studies testing nonverbal sensitivity showed that performance could be impaired when the sensitivity test was described as especially relevant to the opposite gender.

Present research

In the present article we present a series of 11 experiments conducted in our laboratory in which motivation was manipulated to see what effect it had on an interpersonal sensitivity test. We included monetary, ego-relevant, and gender-relevant manipulations such as described above, and also two novel manipulations, forewarning that sensitivity would be tested and exhortation to try hard. The interpersonal sensitivity tests varied, and included tests that were wholly or mostly nonverbal in nature as well as ones that tested sensitivity to exclusively verbal cues. The previous literature suggested that the nonverbal-verbal distinction might be important, with stronger motivational effects to be expected for the latter than the former. Results for the experiments are described separately and also together using meta-analysis. Though ideally the previously published studies would have been included in this meta-analysis, in fact those studies rarely allowed the calculation of effect sizes and so they were not included.

Methods

Across the 11 experiments, 1,369 participants were tested. Because the new studies were similar in design to each other, we first describe the features that apply in common.

Descriptions of the manipulations can be found in the “Appendix”. Participants were undergraduates taking introductory psychology at Northeastern University who received partial course credit. Sample size information is provided in Table 1. For this population the ethnic percentages are typically 71% White, 13% Asian or Asian-American, 7% Hispanic, 6% African-American, and 3% “other.”

The procedure involved administering the motivation manipulations (orally and/or through written instructions) and then the interpersonal sensitivity tests in small group settings, followed by debriefing. Interpersonal sensitivity tests were scored for accuracy using scoring keys appropriate for each; in all studies, higher scores indicated more interpersonal sensitivity. Random assignment of participants to motivation conditions was done either between participants within a testing session, or between small testing sessions. Within each study, the motivation conditions were compared to a control group that received only the standard instructions for the interpersonal sensitivity test.

Analysis plan

Results for the monetary, ego, forewarning, and exhortation conditions are reported for the whole sample because these manipulations should not be specific to one gender or the other. However, to check on this an analysis of variance (ANOVA) was conducted in each study to ascertain

whether participant gender interacted with the manipulation, which would mean the manipulation affected the genders differently. In contrast, for the male- and female-relevant conditions, results are *only* reported separately for men and women because the main effect across both genders is not theoretically meaningful.

Study 1

Participants took an interpersonal sensitivity task in one of four conditions: monetary, male relevant, female relevant, and standard task instructions (control). The task was the Profile of Nonverbal Sensitivity (PONS), which consists of 220 2-s audio and/or video clips of a woman portraying 20 different affective scenes (Rosenthal et al. 1979). The verbal content is masked so that all stimulus information is nonverbal (face, body, and voice tone). Participants were told to circle which of two labels best described the feelings expressed by the woman or the situation she was portraying.

Study 2

The same four conditions were used as in Study 1. Participants took two short forms of the PONS (described earlier). One contained the 40 silent video clips of the woman’s face or body, and the other contained the 40 audio-only clips containing her content-masked speech. Scores on the two tests were summed to form a total score.

Table 1 Summary of study characteristics

Study	N	N males	N females	Motivation conditions	Interpersonal sensitivity test	Cues
1	151	72	79	Monetary, male, female, control	Judge affective cues (PONS)	NV
2	229	78	151	Monetary, male, female, control	Judge affective cues (PONS)	NV
3	246	123	123	Monetary, male, female, control	Judge various social cues (IPT)	NV + V
4	177	82	95	Monetary, male, female, ego, control	Recall appearance	NV
5	178	82	96	Monetary, male, female, ego, control	Judge status and dominance	NV + V
6	68	28	40	Ego, control	Judge extraversion	NV + V
7	70	18	52	Ego, control	Judge dominance	NV + V
8	69	33	36	Forewarning, control	Recall behavior	NV
					Recall spoken words	V
9	77	19	58	Forewarning, control	Recall behavior	NV
					Recall spoken words	V
10	50	27	23	Exhortation, control	Recall behavior	NV
					Recall spoken words	V
11	54	15	35 ^a	Exhortation, control	Recall behavior	NV
					Recall spoken words	V

PONS Profile of Nonverbal Sensitivity, IPT Interpersonal Perception Task, NV nonverbal, V verbal, Male male relevant, Female female relevant, Ego ego relevant

^a Four participants did not report gender

Study 3

The same four conditions were used as in Study 1. The interpersonal sensitivity test was the 15-item Interpersonal Perception Task (IPT; Costanzo and Archer 1989). Each item consists of unfiltered audio and video of individuals or dyads speaking. Items represent five content domains: relationships, kinship, status, competition, and deception. Each item is objectively scored based on known facts about the circumstances or the background of the target persons. Though verbal cues are included in the stimuli, the test developers argue strongly that such cues do not determine accuracy.

Study 4

Monetary, female-relevant, male-relevant manipulations, and standard task instructions (control) conditions were used as in the previous studies and, in addition, there was a manipulation to increase motivation through ego relevance. The interpersonal sensitivity task consisted of memory for the appearance of target persons presented in color photographs or video. Accuracy for recalling appearance was tested in two ways. First, participants were shown 20 photographs of two individuals (male and female university employees) in a candid conversation (stimuli from Hall et al. 2001, and Schmid Mast and Hall 2004). Participants answered five multiple-choice items about the appearance of the targets they had seen for 10 s in each photograph. Correct answers for this test were determined by coding of the photographs. Second, they watched 20 10-s video clips (with sound) of male and female undergraduates; each clip showed one target person in conversation with an unseen partner. Following each video clip, participants answered five multiple-choice items, as with the photograph test. Again, correct answers were determined by coding of the video. Scores for photographs and video were combined for a total appearance accuracy score.

Study 5

The motivation conditions were the same as in Study 4. Participants were shown the identical photographs and video clips used in Study 4 but the accuracy task for the photographs was to judge the relative status of the two people using a 5-point scale going from “Person A is much higher than Person B” to “Person B is much higher than Person A” (see Schmid Mast and Hall 2004, for more details on this accuracy task) and, for the video, to judge the personality dominance of the individuals on a 9-point scale going from “very submissive” to “very dominant.” Criterion values for these judgments were obtained by administering the Dominance Scale from the California

Psychological Inventory (Gough 1987) and the FIRO dominance scale (Schutz 1958) to the target persons after their videotaped conversations. These scales were combined to serve as the criterion for scoring accuracy. For both of these tests, accuracy was calculated as the correlation, across stimuli, between the participant’s guesses about relative status or dominance and the criterion values for these variables. Higher correlations signified more accuracy. Scores on the photograph and video tests were standardized and averaged to form a total status/dominance accuracy composite.

Study 6

Ego relevance was the basis of motivation versus standard task instructions (control), and the interpersonal sensitivity task consisted of judging the extraversion of target persons. The stimulus videotape was similar to the one used in Studies 4 and 5. Targets were 23 male and female undergraduates who were videotaped in casual conversation with another student. The targets’ extraversion was measured after the interaction using the NEO Extraversion Scale (Costa and McCrae 1985). Participants watched two 30-s excerpts (with sound) for each target person and made a rating on a 9-point scale going from “very introverted” to “very extraverted.” The two extraversion ratings of each target person were averaged for each participant and these mean ratings were then correlated with the target persons’ measured extraversion, to form an accuracy score.

Study 7

Ego relevance was the basis of motivation versus standard task instructions (control), with the interpersonal sensitivity task consisting of accuracy in judging the trait dominance of target persons. This test was made from the same pool of videotaped conversations from which the stimuli used in Studies 4 and 5 were made. Perceivers watched two 30-s clips for each of 22 target persons, with the same format and scoring method as in Study 6.

Study 8

Motivation was manipulated by forewarning participants that they would be tested on their recall (vs. control). Interpersonal sensitivity was defined as how much of a target person’s nonverbal behavior they remembered. The details of the nonverbal recall test’s construction appear in Hall et al. (2006a). Participants viewed a 4-min videotape of a White male in his mid-30s being interviewed about his career. Participants were given a list of 16 nonverbal behaviors (see next paragraph) and asked to estimate how often the target person displayed each one, and they were

also asked to write down, verbatim, as much as they could remember about what he said. The order of doing the nonverbal versus verbal recall task was counterbalanced.

Sixteen nonverbal behaviors were counted by trained coders (e.g., cough, frown, lick lips). Responses were scored as correct if they fell within a predetermined range with respect to the actual frequency. Participants received a total nonverbal recall score that could range from 0 to 16 (one point for each nonverbal behavior). Participants also received accuracy scores for their ability to recall what the target person had said. The target's responses were divided into coding segments, typically clauses or phrases. Participants received 1 point for each correctly recalled coding segment in a given response. Trained coders calculated the verbal recall accuracy. Accuracy was the proportion of coding segments recalled correctly.

Study 9

The study was identical to Study 8 in testing the effect of forewarning on accuracy in recalling a target person's behavior, but it used different stimuli (four different interview responses from the Study 8 target person), also ~4 min in duration. As in Study 8, both nonverbal and verbal recall were scored.

Study 10

Motivation was manipulated by exhorting participants to do as well as they could on the interpersonal sensitivity test (vs. control). Interpersonal sensitivity was defined as how much of a target person's nonverbal and verbal behavior the participants remembered. The Study 9 stimulus tape was used, and both nonverbal and verbal recall were scored as in that study. Further methodological details can be found in Hall et al. (2006a).

Study 11

The motivation manipulation was exhortation (vs. control), as in Study 10, and interpersonal sensitivity consisted of recalling nonverbal and verbal behavior. A different but similarly designed test of nonverbal cue recall was used (described in Hall et al. 2006a). In this test, the target person was a White female in her mid-30s being interviewed about her career. Again, verbal and nonverbal recall accuracy were scored.

Summary of study characteristics

Table 1 gives a summary of the methodological characteristics of the 11 studies. Each kind of motivation manipulation was tested in at least two studies. As the final

column shows, the interpersonal sensitivity tests were based on only nonverbal cues, a mixture of nonverbal and verbal cues, or only verbal cues.

Results

Individual studies

The results for each study for the comparison of the motivation versus control conditions are shown in Table 2 (tests involving nonverbal cues) and Table 3 (tests based on verbal cues only). Within the individual studies, there was only one instance of manipulated motivation significantly influencing performance (in Study 4, a female-relevant manipulation hurt women's performance on a nonverbal task). The other effects were typically of trivial magnitude and far from significant. As noted earlier, the effects for gender-neutral manipulations were calculated for men and women together. However, to see whether there were any differential effects for men and women, the gender \times manipulation interaction was calculated within each of the relevant studies. These interactions were never significant, indicating that men's and women's accuracy was equally uninfluenced by the manipulations.

Meta-analysis

When individual studies show small and nonsignificant effects, it is still possible that meaningful trends can be detected through meta-analysis. The present meta-analysis was aided by the Comprehensive Meta-Analysis software (Borenstein et al. 2005). The effect size indicator was Cohen's d , calculated on the basis of the statistical tests reported in Tables 2 and 3. The meta-analytic statistics were the weighted mean (weighted by sample size), combined probability using a fixed effects model, homogeneity test, and between-studies contrast (Rosenthal 1991).

Tests involving nonverbal cues

Table 4 shows results for interpersonal sensitivity tasks for which accuracy was either based entirely on targets' nonverbal cues (i.e., words were not present, words were present but were not intelligible due to content masking, or words were present but were, by definition, irrelevant to accuracy, as in recalling the target's appearance) or accuracy could be based on a combination of the targets' nonverbal and verbal cues (as in judging personality based on full video with sound). The top portion of the table presents results for the gender-neutral manipulations. There

Table 2 Results from individual studies for tests involving nonverbal cues

Type of motivation	Study	<i>t</i>	<i>d</i>	<i>p</i>	<i>M</i> motivated	<i>M</i> control
<i>I. Gender-neutral manipulations</i>						
Monetary	1	<i>t</i> (72) = 1.40	.33	<.17	171.83	168.49
	2	<i>t</i> (137) = .06	.01	<.94	56.08	56.00
	3	<i>t</i> (122) = −.33	−.06	<.72	9.63	9.75
	4	<i>t</i> (72) = .09	.02	<.94	.807	.805
	5	<i>t</i> (63) = −1.42	−.36	<.17	.38	.43
Ego	4	<i>t</i> (72) = −.95	−.22	<.36	.79	.81
	5	<i>t</i> (60) = .00	.00	1.00	.43	.43
	6	<i>t</i> (66) = .03	.01	<.98	.178	.177
	7	<i>t</i> (69) = .41	.10	<.69	.42	.40
Forewarning	8	<i>t</i> (67) = .33	.08	<.75	6.25	6.06
	9	<i>t</i> (75) = .72	.17	<.48	8.17	7.72
Exhortation	10	<i>t</i> (48) = .62	.18	<.55	8.04	7.65
	11	<i>t</i> (52) = .54	.15	<.60	17.07	16.48
<i>II. Gender-relevant manipulations</i>						
Male relevant						
Men	1	<i>t</i> (33) = −.11	−.04	<.91	166.12	166.72
	2	<i>t</i> (44) = −1.46	−.44	<.13	51.62	54.03
	3	<i>t</i> (61) = −.85	−.22	<.40	9.52	9.97
	4	<i>t</i> (32) = .09	.03	<.94	.790	.784
	5	<i>t</i> (34) = −.14	−.05	<.90	.400	.403
Women	1	<i>t</i> (31) = 1.11	.40	<.25	174.18	170.00
	2	<i>t</i> (88) = .38	.08	<.68	57.56	57.10
	3	<i>t</i> (61) = 1.33	.34	<.18	10.16	9.53
	4	<i>t</i> (41) = −.32	−.10	<.76	.820	.825
	5	<i>t</i> (39) = −1.40	−.45	<.18	.39	.46
Female relevant						
Men	1	<i>t</i> (34) = −.50	−.17	<.73	164.17	166.72
	2	<i>t</i> (47) = .27	.08	<.80	54.44	54.03
	3	<i>t</i> (60) = −.93	−.24	<.35	9.50	9.97
	4	<i>t</i> (30) = −.45	−.16	<.67	.777	.784
	5	<i>t</i> (28) = .30	.11	<.78	.42	.40
Women	1	<i>t</i> (39) = 1.40	.45	<.16	174.00	170.00
	2	<i>t</i> (84) = .64	.14	<.32	57.74	57.10
	3	<i>t</i> (60) = .31	.08	<.76	9.67	9.53
	4	<i>t</i> (35) = −2.12	−.72	<.05	.79	.82
	5	<i>t</i> (32) = −1.56	−.55	<.14	.39	.46

Significance tests are two-tail

Table 3 Results from individual studies for tests involving verbal cues only

Type of motivation	Study	<i>t</i>	<i>d</i>	<i>p</i>	<i>M</i> motivated	<i>M</i> control
Forewarning	8	<i>t</i> (67) = .55	.13	<.59	.26	.25
	9	<i>t</i> (75) = 1.54	.36	<.13	.15	.12
Exhortation	10	<i>t</i> (48) = 1.38	.40	<.18	.12	.10
	11	<i>t</i> (52) = 1.80	.50	<.08	.11	.10

Significance tests are two-tail

was no motivation effect, either for the individual motivation manipulations or for all 13 of the gender-neutral manipulations considered together, as indicated by the small and nonsignificant combined *Z*s. There was never significant heterogeneity, as shown in the last column, meaning that the effects varied little across studies.

A comparison was made between studies that were based purely on nonverbal cues (*Md* = .08, 8 results) and studies based on a mixture of verbal and nonverbal cues as described earlier (*Md* = −.06, 5 results). This contrast was

Table 4 Meta-analytic summary of motivational effects: tests involving nonverbal cues

Manipulation	<i>k</i>	<i>Md</i>	<i>Z</i>	Homogeneity (<i>p</i>)
<i>I. Gender-neutral manipulations</i>				
Monetary (Studies 1–5)	5	.00	−.06	.40
Ego (Studies 4–7)	4	−.02	−.23	.80
Forewarning (Studies 8–9)	2	.12	.72	.81
Exhortation (Studies 10–11)	2	.16	.84	.96
All (Studies 1–11)	13	.02	.38	.90
<i>II. Gender-relevant manipulations</i>				
Male relevant				
Men (Studies 1–5)	5	−.16	−1.20	.83
Women (Studies 1–5)	5	.08	.56	.31
Female relevant				
Men (Studies 1–5)	5	−.08	−.62	.90
Women (Studies 1–5)	5	−.03	−.23	.07

Md = mean *d*, weighted by sample size; *k* = number of studies

not significant, $p < .31$. This indicates that it is appropriate to analyze these studies together.

The bottom portion of Table 4 shows the meta-analytic results for the five studies with gender-relevant manipulations. As explained earlier, these effects were always calculated for men and women separately. As the table shows, no effects were significant, either for the own-gender-relevant conditions or for the opposite-gender-relevant conditions, where decrements in performance might have occurred (cf. Horgan and Smith 2006; Koenig and Eagly 2005). There was never significant heterogeneity, although heterogeneity approached significance for women in the female-relevant condition (due to the Study 4 result referred to earlier).

Tests based on verbal cues only

In studies involving the processing of only verbal cues, the motivation manipulations were always gender neutral (forewarning and exhortation). Although the interpersonal sensitivity test stimuli contained nonverbal cues (because participants watched a person being interviewed), the nonverbal cues were by definition irrelevant because what was tested was recall of the spoken words. Here, the results were different from those for nonverbal cues (see Table 5). There was a positive but nonsignificant effect for forewarning and a significant effect for exhortation as well as a significant effect across all four of the studies (with no significant heterogeneity). Thus, when the task was based on accurate recall of verbal information, motivation had a significantly positive effect, though one that was small in magnitude, based on the *d* statistic.

Table 5 Meta-analytic summary of motivational effects: tests involving verbal cues only

Manipulation	<i>k</i>	<i>Md</i>	<i>Z</i>	Homogeneity (<i>p</i>)
Forewarning (Studies 8–9)	2	.24	1.47	.47
Exhortation (Studies 10–11)	2	.44	2.22*	.84
All (Studies 8–11)	4	.32	2.56**	.77

Z is calculated as a fixed effect (two-tail tests)

Md = mean *d*, weighted by sample size; *k* = number of studies

* $p < .05$; ** $p < .01$

Discussion

The effect of motivation on accuracy of interpersonal perception was examined in 11 experiments that used five methods for influencing motivation as well as a variety of interpersonal sensitivity tests. Meta-analysis showed no effect of the motivation manipulations for tests involving nonverbal cue processing, with net effects that were near zero, very far from achieving statistical significance, and homogeneous. There was also no evidence, for any of the manipulations, of a differential impact on men's and women's accuracy. These null results cannot be explained in terms of ceiling effects on the nonverbal tests because accuracy was not near the upper limit for any of the tests.

It is important to note that finding no impact of a motivation manipulation when nonverbal cues are judged in no way precludes an important role for motivation in the *development* of such skill. In fact, it is highly likely that the emergence of the well-documented female superiority in judging affective nonverbal cues (see meta-analyses by Hall 1978, 1984; McClure 2000) is closely tied to differential motivation to be interested in, and to value skill in, judging other people. Exposure to gender stereotypes (Briton and Hall 1995; Spence et al. 1975) and socialization into different self-construals (e.g., interdependent vs. autonomous; Cross and Madson 1997) could easily lead, over time, to gender differences in many kinds of interpersonal skill via the development of pertinent knowledge.

The possibility that nonverbal accuracy may be based more on people's knowledge of the domain in question than on their immediate motivation is consistent with one of the present studies (Study 2), which did not find a motivational effect but did find a significant positive correlation between a paper-and-pencil test of nonverbal cue knowledge and performance on the interpersonal sensitivity test (Rosip and Hall 2004). Also, Davitz et al. (1964) found a substantial correlation between knowledge of the vocal expression of emotion (as measured on a paper-and-pencil test) and accuracy in decoding emotions in actual

voices. Thus, knowledge of nonverbal cues may be a more promising source of accuracy than motivation.

In contrast to the lack of motivation effects for nonverbal cue processing, motivation did have a positive impact when the task required processing of verbal cues—specifically, recalling what a target person had said. This result fits with those previous studies that found positive motivation effects on interpersonal sensitivity tasks based on Ickes' empathic accuracy paradigm, in which verbal cues contribute much more than nonverbal cues to the attainment of accuracy.

In considering why motivation had this effect, it seems likely that people are well practiced in consciously applying themselves to the task of processing verbal information and are able to access mental representations of what they have heard. Nonverbal information, by contrast, is more often processed nonconsciously or automatically as suggested earlier. Because of this, paying deliberate attention to nonverbal cues may be a less familiar and more distracting activity. It is likely, too, that effort helps recall of stimuli that one understands (the meanings of the words and sentences) more than it helps recall of stimuli whose meanings may be obscure (nonverbal cues).

Limitations

Meta-analysis is a powerful tool and when it produces a null result, especially in the presence of little heterogeneity, one gains confidence that the effect is so small as to be negligible. Still, the present meta-analysis is based on a limited number of studies that used a particular set of manipulations and measures. It could be argued that the present studies did not go far enough in manipulating motivation. Stronger manipulations could be implemented, for example by offering much larger monetary incentives or telling participants that an important outcome hinges on their performance. Alternatively, it may be the case that the present manipulations were too strong; perhaps an optimally effective level of motivation is one in which people do *not* try excessively hard, because that might disrupt an otherwise automatic process.

Another possible limitation lies in the possibility that participants were already functioning at a relatively high level of motivation, and therefore at the limits of their capacity, when taking the interpersonal sensitivity tests that relied on nonverbal cues, and that adding additional motivation had negligible benefit. Future research might be able to demonstrate motivation effects in samples of participants who start off at a low level of motivation. However, in the present studies one might argue that men started out at a relatively low motivational level yet

manipulations were still not successful in raising their accuracy on the nonverbal cue based tests.

When considering other potentially motivating states that one might manipulate in the future, a challenge for researchers will be to ascertain where to draw the line between the states of trying and/or wanting to do well (which were the focus of the present research) and other states such as simply paying more attention or being more mindful of the cues, which may not necessarily be motivational in this sense. Although trying and wanting to do well may imply attention and mindfulness, one can pay attention and be mindful without having an explicit, or even implicit, goal to do well on the task. For example, one might pay extra attention to a strange-looking person out of sheer fascination, or to a member of a stereotyped group in order to find cues that confirm one's existing attitude. In such cases there is not necessarily a goal of accuracy.

A further challenge to operationalizing motivation lies in ambiguity over whether a given manipulation leads to less or more effort. An example from the current research applies here: defining a task as especially relevant to one's own gender could go either way depending on whether the participant wants to confirm or disconfirm gender stereotypes. Another example is in the study of the impact of social power on interpersonal sensitivity. Some researchers (e.g., Snodgrass 1985) have assumed that power is related to motivation-based interpersonal sensitivity, but it is not at all clear on theoretical grounds whether the high or low power person would experience the greater motivation to be accurate (Hall et al. 2006b).

Such ambiguity might not present much of an obstacle if it were a simple matter to determine what motivational state a person is in as a consequence of an experimental manipulation. But this is not easy because participants may lack this insight, and furthermore some studies are designed to manipulate motivation very subtly and therefore a direct inquiry into their motivation via self-report would not make sense. One might, alternatively, argue that the evidence for motivation lies in its effect on accuracy—that the “proof is in the pudding”—but this is circular reasoning and it founders on the possibility that motivation can be present yet not be helpful (or even be harmful).

Because there are plausible reasons why trying harder might help, hurt, or have no impact on performance on a test involving nonverbal cues, it is possible that all of these tendencies were present in our studies but they canceled one another out within each study, leaving an overall null effect. It is very important for future research to explore the circumstances under which different motivational effects occur and to develop methods for determining what motivational state participants are in.

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Appendix: Description of motivation manipulations

Study 1

Monetary: “In order to encourage your very best efforts on this task, we will award prizes based on your accuracy scores. The average accuracy of a norm group on this test is 170 correct out of 220 items. If your score is between 180 and 185, you will receive a prize of \$15.00. If your score is between 185 and 190, you will receive \$30.00, and if your score is above 190, you will receive a prize of \$50.00!! These goals are not unrealistic because we know that people can score this high. This offer is for real so do your best!”

Female relevant: “The judgment of nonverbal cues (such as on the test you are about to take) is a very important skill in daily life. Intuitive skill of this kind plays a crucial role in interpersonal harmony and the development of intimacy. One’s ability to be helpful and responsive to others is tied to the ability to judge their feelings. Emotional sensitivity to others is related to caring, nurturing, and bonding between parents and infants, and contributes to warm and understanding relationships at all ages.”

Male relevant: “The judgment of nonverbal cues (such as on the test you are about to take) is a very important skill in daily life. Analytical skill of this kind plays a crucial role in deciphering other people’s motives as well as their strengths and weaknesses. Shrewd judgment of others is related to leadership and the ability to make confident independent judgments of others, whether you are working with others or competing with them. The person who comes out ‘on top’ in social interactions is likely to be someone with excellent interpersonal judgment skills.”

Study 2

Monetary: Participants read that participants scoring in the top 5% of participants’ scores would receive a prize of \$50.00.

Male relevant and female relevant: Worded almost identically to Study 1.

Study 3

Monetary: Participants read that they would win \$15.00 if they got more than 13 of the 15 test items correct.

Male relevant and female relevant: Worded almost identically to Study 1.

Studies 4 and 5

Monetary: Participants were told that everyone in the top 10% would win \$50.00 and the top scoring participant would win \$100.00.

Ego: “Skill in judging other people is related to overall intelligence, cognitive aptitude, and other intellectual skills that can be measured and used in school and work. In sum, a person who is generally smart is a good judge of other people’s characteristics based on briefly presented cues.”

Male relevant: “Skill in judging other people is related to ability to gain and maintain leadership, advancement in organizations, the capacity to skillfully read others’ motives and intentions, ability to achieve strategic advantage over others, ability to persuade others, ability to compete successfully against others, and successful negotiation in decision-making situations.”

Female relevant: “Skill in judging other people is related to ability to maintain intimate relationships and friendships with others, whether others view you as an interpersonally sensitive and warm person, the capacity to respond to others’ emotional needs, the ability to be emotionally attuned to others, ability to build trust and interpersonal harmony, and success in creating group cohesion and rapport.”

Studies 6 and 7

Ego: “Ability to judge another person’s personality traits is an important part of what is called *social intelligence*, or the ability to accurately perceive others and to make wise choices in terms of your own behavior towards others. Social intelligence, in turn, is an important component of overall, *general* intelligence. Research shows positive correlations between overall intelligence and other cognitive abilities and scores on nonverbal judgments tasks such as the one you are about to take.”

Studies 8 and 9

Forewarning: Participants were told they would watch a video of a man talking about himself and would afterwards answer questions about what he had said and what he did nonverbally. In the control condition, participants were just told they would watch a video of a man talking about himself, with no mention that they needed to remember his behavior.

Studies 10 and 11

Exhortation: Participants were told that they should remember as much as possible about the behavior of the target person. Participants in the control condition were forewarned that they would be asked to remember this information, too, but they were not urged to try hard. Thus, the control condition in this study was the same as the forewarning (motivation) condition in Studies 8 and 9.

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