

Depression, Race-Based Bias, and Judgments of Veracity

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Abstract. *Introduction:* The depressive realism hypothesis suggests that depressed individuals have a more realistic perception than nondepressed. Most studies depict the effects of depressive realism on self-perceptions. However, some lie detection studies suggest the effects of depressive realism on the perception of others. Our study investigated the hypothesis that individuals with subclinical depression levels (dysphoric) show a heightened accuracy in lie detection and a lower truth bias. Furthermore, we expected these effects to be stronger in positive statements. Moreover, we expected that nondysphoric but not dysphoric individuals would show a heightened truth bias for Black targets. We also expected to find the effects of depressive realism in judgmental confidence and in self-evaluations of performance. *Methods:* 472 participants classified 16 video statements as truth or lie. We tested all hypotheses using three depression measures: IPIP-300 Depression Subscale, the PHQ-9, and the CES-D. *Results:* In contrast to our hypothesis, we found no heightened accuracy in the veracity judgments of dysphoric individuals. Truth bias was higher in dysphoric participants than in nondysphoric. There was an interaction of valence with PHQ-9 but not with IPIP or CES-D. Nondysphoric but not dysphoric participants had a higher truth bias for Black targets. Furthermore, dysphoric individuals had lower judgmental confidence and lower but not more accurate self-evaluation values. *Conclusion:* We discuss the results and future directions.

Keywords: depression, race-based bias, veracity judgments, deception detection



Introduction

The classical view of depression suggests that depressed individuals have distorted views of themselves, the world, and the future (Beck, 1963, 1967). Especially negative self-view has been studied extensively, providing evidence for distorted self-views (Alloy & Ahrens, 1987; Beck, 1967; Gara et al., 1993; Oliver & McGee, 1982). However, some researchers propose that negative self-view might not be caused by distortion but rather by a more realistic perception of own abilities, suggesting that positively biased views of the self are related to mental health (Alloy & Abramson, 1979).

The Depressive Realism Hypothesis

Alloy and Abramson (1979) investigated differences in the judgment of contingency tasks in which the participants judge contingencies between the pressing of a button and the appearance of a light. They found evidence for their suggestion that depressed individuals do not underestimate the contingencies, as Seligman (1972) had previously

proposed; rather, they have a more realistic perception than nondepressed individuals, who show an illusion of control (Blanco et al., 2011; Langer, 1975; Matute 1995; Yarritu et al., 2014), which the authors proposed as functioning as a self-serving bias. However, not all studies investigating the effect of depressive realism could replicate the results (Venkatesh et al., 2018; see also Moore & Fresco, 2012). In their meta-analytic review, Moore and Fresco found a small aggregated effect size, suggesting that the effect may occur more often in lower levels of depression (see also Ruehlman et al., 1985; Soderstrom et al., 2011). They also found the effect to be influenced by method factors, such as the utilization of self-report measures to assess depression, which increased the probability of finding depressive realism effects.

Besides contingency-judgment tasks, we investigated the effects of depressive realism on several other tasks, one of which was the self-evaluation of task performance, comparing task performance to self-evaluations. Gotlib and Meltzer (1987) found the effects of depressive realism in the self-evaluation of social competence by having participants rate their social competence in a previous interaction with another individual. Dennard and Hokanson (1986) also found less positively biased self-evaluations of performance in cognitive tasks for dysphoric individuals. A more recent study by Fu et al. (2012) found the effects of depressive realism in the self-evaluation of task performance of dysphoric individuals.

Deception Detection

In their meta-analysis, Bond and DePaulo (2006) summarized the results of previous studies about the ability of people to detect lies, which proved to be close to chance. The reasons for the poor ability to detect lies include people's beliefs in the importance of clues that are mostly irrelevant to the detection of deception (DePaulo et al., 2003; Vrij, 2008) and the missing actual reliable clues of deception (DePaulo et al., 2003; Hartwig & Bond, 2011).

A common phenomenon in lie detection is truth bias, which describes the phenomenon that people tend to believe a message is truthful more often than deceitful (DePaulo et al., 1997). This effect aligns with Vrij's (2008) suggestion that people do not *want* to believe that they are being lied to, and that it is not always in their best interest to detect lies. Researchers explain the phenomenon of truth bias with the rarity of lies and reasons to tell lies in everyday life (O'Sullivan et al., 1988; Vrij & Baxter, 1999).

Dysphoric Individuals' Ability to Detect Lies

Lane and DePaulo (1999) reported evidence for the assumption that individuals suffering from low or moderate levels of depression (also called dysphoric) show greater accuracy than nondysphoric individuals at detecting false remarks meant to encourage a social counterpart, though there is no overall heightened accuracy among depressed individuals. This suggests that the accuracy depressed individuals show in detecting lies may be influenced by the emotional valence of the statement, specifically a heightened accuracy for positive statements.

Weightman et al. (2014) summarized previous investigations into the relationship between depression and the interpretation of emotional stimuli and concluded that the social cognition of depressed individuals might be influenced by a mood-congruent bias, suggesting a heightened accuracy at identifying negative emotions and a reduced accuracy for positive ones. In the lie-detection task, this could mean that depressed individuals might be more ready to believe in negative than in positive statements.

However, other studies indirectly suggest that depressed individuals might generally be more accurate in detecting lies. Harkness et al. (2005) found that dysphoric individuals were more accurate in attributing emotional states to photographs of eyes, suggesting a heightened sensitivity to social clues. More recent studies investigated the effect of mood on lie detection abilities (Forgas & East, 2008; Reinhard & Schwarz, 2012) and induced positive or negative moods in the participants. The results of those studies suggest that individuals in a negative mood show a more accurate lie-detection ability than individuals in a positive mood.

Prejudice-Related Concerns

The research field of lie detection delivers further opportunities to detect the effects of depressive realism in the form of self-serving biases in social interactions. Lloyd et al. (2017) investigated race-based biases in detecting lies. In six studies, they recruited White and Black participants to rate the veracity of statements by White and Black targets. The participants rated statements by Black targets more often as truth than they did for White targets. This effect was moderated by an interaction between internal and external motivation to respond without prejudice, measured with Plant and Devine's (1998) Internal (IMS) and External Motivation (EMS) to Respond Without Prejudice. From the results of their six studies, Lloyd et al. concluded that individuals who were primarily internally motivated to respond without prejudice show the highest truth bias toward Black individuals. Plant and Devine suggested that people internally motivated to regulate racial prejudice "are primarily concerned with living up to their personally important, self-defining egalitarian standards" (Plant et al., 2010, p. 1136). The relationship between the internal motivation to respond without prejudice and the heightened truth bias for Black targets suggests that the heightened truth bias for Black targets might have a self-view protecting function parallel to the self-serving positivity bias found in the depressive realism literature.

Goal of This Study

Research supporting the depressive realism hypothesis shows that, unlike nondepressed individuals, depressed individuals do not exhibit a self-serving positivity bias. In light of the literature presented, we deduce that dysphoric individuals might be more accurate in classifying lies and truths than nondepressed counterparts. Therefore, our first hypothesis suggests a heightened accuracy in classifying lies and truths among dysphoric individuals (accuracy hypothesis).

Furthermore, if we can explain the truth bias as a self-serving bias like Vrij's (2008) explanation for the generally low lie-detection ability suggests, we can also assume that dysphoric individuals do not show as much truth bias as nondysphorics. We therefore also assume that dysphoric individuals show a lower truth bias than nondysphorics (truth bias hypothesis).

Lane and DePaulo (1999) found evidence for a heightened accuracy in dysphoric individuals only for statements meant to encourage a conversational counterpart; thus, heightened accuracy might be stronger for positive statements. To test this assumption, we propose a third hypothesis, which suggests that the difference between the accuracy of dysphoric and nondysphoric individuals at

detecting lies and truths is higher for positive statements than for negative statements (statement valence hypothesis).

Lloyd et al. (2017) found the racial-bias effect was moderated by an interaction between the internal and external motivation to respond without prejudice. They found that individuals primarily internally motivated to respond without prejudice show the highest racial-bias effect, which in turn suggests that such bias might serve as protection for a positive self-view. Because dysphoric individuals have an overall negative self-view, we assume that nondysphoric individuals (but not dysphoric individuals) have a higher truth bias for Black targets than for White targets (race-realism hypothesis).

Dysphoric individuals have also been found to evaluate their self-performance more accurately than nondysphoric individuals (Fu et al., 2012). Thus, we predict that dysphoric individuals show a more accurate evaluation of their ability to detect lies (expectancy accuracy hypothesis). Also, because the depressive realism hypothesis suggests a lesser illusion of control in depressed individuals (Alloy & Abramson, 1979), we expect that dysphoric individuals are less confident about their classifications of the statements as truthful or dishonest than nondysphoric individuals (confidence hypothesis).

Methods

Participants

A preregistered power analysis (see <https://aspredicted.org/3b4z5.pdf>), testing for a correlation between the IPIP depression score and overall detection accuracy given the true effect $\rho = .15$ and an α level = 0.05 one-tailed, resulted in a minimum of $N = 472$ participants regarded as necessary to find the assumed effect. Accordingly, the final sample size contained $N = 472$ participants, who were recruited via the Amazon platform mTurk. The participants had to be currently located in the United States, speak English on a mother-tongue level, approved in more than 100 studies, and have a 95% approval rate on mTurk. In return for their participation, they received \$0.60. Finally, of the 701 participants who finished the study, only those were retained who correctly answered a bot/attention check (see Benz, 2023, Supplement), approved the usage of their data, and did not have any technical problems. In addition to that, one person commented on having participated twice, so their second dataset was excluded. Of the remaining 472 participants, 191 were female, 277 male, one participant identified as “other,” and four participants did not specify their gender. The participants were from 18 to 74 years ($M = 36.99$, $SD = 11.425$), most of whom ($n = 348$) identified

as White/Caucasian Americans; 83 participants identified as African American/Black, 13 as Asian Americans, 7 as bi- or multiracial, 15 as American/Alaska Native, 3 as Native Hawaiian/Pacific Islander. Three participants did not specify their ethnicity.

Procedure

The online survey took place on the platform Unipark (Globalpark AG, Hürth, Germany). After agreeing to the terms of participation, the participants provided their mTurk worker ID, their gender, age, highest academic degree, and employment status as well as confirmation that they were located in the US and have an English proficiency at a mother-tongue level. Then we performed sound and video functionality checks. We filtered out participants who could not provide the correct color of a flower shown in the video. Thereafter, we instructed the participants to rate one of 20 sets of videos, each consisting of 16 of the overall 320 videos of average 30-second length, taken from the Miami University Deception Detection Base by Lloyd et al. (2018). The videos used consisted of statements made by 80 targets (20 Black females, Black males, 20 White females, and 20 White males). The participants rated each statement either as a truth or a lie, and they had to rate their confidence in their judgment on a scale from 0% to 100%. The targets in the videos consisted of equal numbers of honest and dishonest, positive or negative statements about an acquaintance by equal numbers of Black and White, male and female college students. Next, we assessed the participants' depression scores using three questionnaires. Because the depression scales used most often have proved to lack symptom overlap (Fried, 2017), we chose to investigate our hypotheses with three different scales of depression to test the robustness of found effects.

The International Personality ItemPool (IPIP)N3: Depression Scale (IPIP) is a subscale of the Neuroticism scale of the IPIP 300 personality questionnaire based on the five-factor model by Costa and McCrae (1985) and consists of 10 items from the English international personality item-pool (Goldberg, 1999); a reliability score of $\alpha = .88$ is reported. In this study, the subscale reached a reliability score of $\alpha = .86$. All items are rated on a 5-point Likert scale (1 = *strongly disagree* - 5 = *strongly agree*), with three being inverted. In their investigation of disorder-specific predictions of the IPIP, Uliaszek et al. (2009) found the depression subscale of the IPIP to be predictive of a clinical diagnosis of major depression, having their confirmatory factor analysis demonstrating its incremental, convergent and discriminant validity. Because we were assessing a nonclinical population, we chose the IPIP to discriminate between lower levels of nonclinical depression because of its

Table 1. IPIP Depression scores depending on the groups of CES-D and PHQ-9

	CES-D				Total	
	Nondepressed		Depressed		N	(IPIP)
	N	(IPIP)	N	(IPIP)		
PHQ						
Healthy	131	(17.02)	13	(21.38)	144	(18.03)
Low	29	(20.59)	45	(27.13)	74	(24.57)
Moderate	4	(25.75)	105	(30.48)	109	(30.30)
Severe	0	(-)	145	(33.89)	145	(33.89)
Total	164	(18.41)	308	(31.21)	472	(26.76)

Note. Depression ranged from 8 to 37 on the IPIP depression subscale, from 0 to 22 on the PHQ-9, and from 0 to 37 on the CES-D. The table presents the mean value of the IPIP depression subscale for each group of participants.

lack of assessments of more severe symptoms (i.e., suicidal thoughts).

The Patient-Health-Questionnaire – 9 (PHQ-9) by Spitzer et al. (1999) is the short version of the PRIME-MD; they report a reliability score of $\alpha = .93$. All nine items assess symptoms associated with depression for the last 2 weeks and range from 0 (*not at all*) to 3 (*nearly every day*). A sum score is calculated, ranging from 0 to 27. The instrument differentiates between the five groups of healthy (0–4), mild depression (5–9), moderate depression (10–14), moderately severe depression (15–19), and severe depression (20 or higher). However, because of the low number of participants who scored 20 or higher, we merged the two highest categories in this study, which we refer to as severe depression.

The Center for Epidemiologic Studies – Depression Scale (CES-D Scale), developed by Radloff (1977), is one of the most widely used depression screening instruments. Twenty items assess statements about the past week, ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*), with four inverted items. Total scores between 0 and 60 are possible. Most researchers use cutoffs of 16 or 21 points to differentiate between groups of depressed and nondepressed. In this study, lower values of depression were of interest, so we chose a cutoff of 16. In this study, the CES-D reached a reliability score of $\alpha = .93$. Using these three instruments, we employed a depression scale more suitable to discriminating between lower values of dysphoria, an instrument assessing the nine criteria of the DSM-IV for major depression, and one instrument widely used in depression research. Moreover, we assessed dysphoria once as a continuous variable, once as a dichotomous variable, and once in different discrete severity levels, thus investigating found effects with different operationalizations of the construct.

Next, the participants provided their ethnicity and their political affiliations from Republican to Democratic from left to right on 11-point Likert scales after the question was posed: “Where do you put yourself on these two political

spectrums.” Participants then provided their estimate of correctly identified videos ranging from 0 to 16 (*Performance Expectancy*) and their estimate on whether their lie-detection ability was generally below average, average, or above average (*Self-evaluation of Lie-Detection Ability*). We then implemented a bot/attention check (see Benz, 2023, Supplement). The participants also had the opportunity to report any technical errors and whether we should use their data. After this, the participants received feedback on their veracity judgment performance. On the next page, the participants could give the researchers feedback. The survey ended with a randomly generated code used for payment reception on mTurk.

For our analyses, we calculated the main criteria of overall detection accuracy as the percentage of correctly classified statements and the truth bias as the percentage of statements rated as truth.

Results

Sample Characteristics

The participants' Depression scores ranged from 10 to 46 ($M = 26.735$, $SD = 8.241$) on the IPIP Depression Subscale (IPIP), from 0 to 27 ($M = 9.710$, $SD = 7.051$) on the PHQ-9 and from 0 to 52 ($M = 21.787$, $SD = 12.788$) on the CES-D. The distribution of IPIP scores was significantly different from normal and slightly left-skewed ($\gamma = -.197$, Kolmogorov-Smirnov: $p < .001$).

Based on the CES-D, $n = 164$ participants were categorized as nondepressed and $n = 308$ as depressed (see Table 1). Scores were significantly different between female ($M = 25.89$, $SD = 8.63$) and male participants ($M = 27.36$, $SD = 7.87$) neither on the IPIP $t(465) = -1.907$, $p = .057$ nor on the PHQ-9 ($\chi^2(3, N = 467) = 5.439$, $p = .142$, $V = .108$) or the CES-D ($\chi^2(1, N = 467) = 2.305$, $p = .140$, $\phi = .070$).

Table 2. Correlations of IPIP depression scores with truth bias, accuracy scores, judgment confidence, performance expectancy and expectancy accuracy in detecting lies and truths

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.				
1. IPIP	—																																		
Truth bias																																			
2. Overall	.23**	—																																	
3. Black	.13**	.79**	—																																
4. White	.24**	.82**	.29**	—																															
5. Black/White Diff.	-.10**	-.06	.57**	-.62**	—																														
6. Positive	.09*	.78**	.63**	.67**	-.02	.26**	—																												
7. Negative	.27**	.80**	.62**	-.06	-.07	.26**	—																												
8. Pos./Neg. Diff	-.15**	-.05	-.01**	.21**	.04	.59**	-.63**	—																											
9. Black Positive	.03	.59**	.76**	.77**	.44**	.79**	.17**	.50**	—																										
10. White Positive	.12**	.65**	.25**	.23**	-.46**	.80**	.24**	.44**	.26**	—																									
11. Black Negative	.17**	.62**	.78**	.81**	.44**	.19**	.78**	-.50**	.18**	.13**	—																								
12. White Negative	.25**	.64**	.21**	-.08	-.52**	.21**	.80**	-.50**	.08	.25**	.24**	—																							
Detection Accuracy																																			
13. Overall	-.06	-.05	<.01	-.08	.07	-.04	-.04	.01	-.02	-.04	.02	-.09	—																						
14. Lies	-.22**	-.84**	-.65**	-.71**	.08	-.66**	-.68**	.04	-.50**	-.55**	-.50**	-.57**	.58**	—																					
15. Truths	.16**	.83**	.68**	.65**	-.01	.65**	.66**	-.04	.50**	.53**	.54**	.50	.52**	-.40**	—																				
16. Positive	-.02	-.06	-.02	.07	.05	-.05	-.04	-.00	-.03	-.04	.01	-.07	.71**	.43**	.35**	—																			
17. Negative	-.06	-.02	.02	-.02	.06	-.01	-.02	.01	.01	-.02	.02	-.05	.71**	.40**	.39**	.00	—																		
18. Pos. Truths	.06	.61**	.51**	.47**	.01	.79**	.18**	.48**	.63**	.63**	.16**	.13**	.40**	-.28**	.74**	.58**	-.00	—																	
19. Neg. Truths	.18**	.65**	.52**	.52**	-.02	.21**	.81**	-.51**	.14**	.19**	.65**	.62**	.39**	-.32**	.77**	-.03	.58**	.15**	—																
20. Pos. Lies	-.09	-.65**	.51**	-.53**	.04	-.81**	-.23**	-.46**	-.64**	-.65**	-.15**	-.20**	.44**	.77**	-.30**	.62**	.01	-.28**	-.18**	—															
21. Neg. Lies	-.25**	-.65**	.49**	-.56**	.09	-.21**	-.81**	.52**	-.13**	-.20**	-.61**	-.67**	.45**	.78**	-.31**	.04	.60**	-.15**	-.31**	.19**	—														
22. Black Pos. Truths	.01	.42**	.58**	.11*	.38**	.59**	.09	.40**	.78**	.16**	.12*	.02	.29**	-.19**	.52**	.42**	-.01	.74**	.06	-.21**	-.08	—													
23. Black Pos. Lies	-.03	-.50**	-.60**	-.22**	-.30**	-.64**	-.17**	-.37**	-.77**	-.24**	-.16**	-.11*	.32**	.58**	-.25**	.48**	-.02	-.23**	-.15**	.78**	.12**	-.20**	—												
24. Black Neg. Truths	.11*	.48**	.61**	.18**	.34**	.14**	.61**	-.40**	.14**	.09	.78**	.19**	.34**	.54**	-.21**	.61**	.01	.48**	.12**	.78**	-.11*	-.22**	.07	—											
25. Black Neg. Lies	-.16**	-.49**	-.61**	-.19**	-.34**	-.16**	-.60**	.38**	-.14**	-.12*	-.79**	-.17**	.31**	.56**	-.25**	.00	.43**	-.13**	-.24**	.13**	.74**	-.11*	.10*	-.22**	—										
26. White Pos. Truths	.08	.49**	.18**	.58**	-.35**	.59**	.19**	.31**	.16**	.77**	.12**	.17**	.31**	.31**	-.23**	.59**	.43**	.01	.75*	.16**	-.21**	-.15**	.11*	-.14**	.11*	-.08	—								
27. White Pos. Lies	-.11*	-.51**	-.20**	-.61**	.36**	-.64**	-.18**	-.36**	-.24**	-.77**	-.08	-.21**	.37**	.62**	-.23**	.50**	.03	-.22**	-.13**	.80**	.17**	-.13**	.23**	-.02	.10*	-.19**	—								
28. White Neg. Truths	.18**	.53**	.20**	.63**	-.38**	.18**	.64**	-.40**	.08	.20**	.23**	.77**	.26**	-.29**	.59**	-.06	.42**	.11*	.78**	-.18**	-.27**	.02	-.10*	.21**	-.15**	.14**	-.18**	—							
29. White Neg. Lies	-.22**	-.50**	-.13**	-.65**	.45**	-.16**	-.62**	.40**	-.06	-.19**	-.15**	-.81**	.37**	.60**	-.22**	.05	.46**	-.10*	-.23**	.15**	.77**	-.00	.09	-.10	.13**	-.14**	.15**	-.26**	—						
30. Confidence	-.15	.08	-.07	-.07	.00	.09*	.04	.04	.12	.13**	.08	-.02	-.07	-.10*	.03	-.00	-.09*	.08	-.02	-.08	-.08	-.01	-.04	.03	-.10*	.12**	-.07	-.06	-.03	—					
31. Performance Exp.	-.04	-.22**	.18**	.18**	-.00	.15**	.20**	-.04	.12	.12**	.16**	.15**	-.02	-.19**	.18**	-.03	.01	.10*	.17**	-.14**	-.15**	.10*	-.09	.13**	-.12*	.06	-.13**	.12**	-.11*	.32**	—				
32. Expectancy Acc.	-.01	-.21**	-.15**	-.19**	.04	-.15**	-.19**	.04	-.11*	-.13**	-.13**	-.17**	.51**	.45**	.10*	.38	.35	.11*	.05	.34**	.35**	.06	.23**	.06	.25**	.10*	.30**	.02	.28**	-.30**	-.87**	—			

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

Table 3. Means (standard deviations) of truth bias, accuracy scores, judgment confidence (%), performance expectancy (0–16), and expectancy accuracy (overall detection accuracy minus performance expectancy) in detecting lies and truths depending on PHQ-9 groups

Variable	PHQ-9				Total <i>M</i> (<i>SD</i>)
	Healthy <i>M</i> (<i>SD</i>)	Low <i>M</i> (<i>SD</i>)	Moderate <i>M</i> (<i>SD</i>)	Severe <i>M</i> (<i>SD</i>)	
Truth bias					
Overall	58.81 (13.90)	63.94 (17.48)	67.83 (17.63)	72.80 (16.40)	72.80 (17.06)
Black	61.46 (18.61)	66.05 (21.35)	67.89 (21.81)	71.47 (20.34)	66.74 (20.67)
White	56.16 (19.22)	61.82 (22.27)	67.78 (22.07)	74.14 (19.91)	65.25 (21.79)
Black/White Diff.	5.30 (25.67)	4.22 (26.11)	0.11 (26.10)	−2.67 (23.35)	1.48 (25.30)
Positive	63.11 (20.07)	65.88 (22.97)	70.87 (20.63)	71.29 (20.42)	67.85 (21.03)
Negative	54.51 (18.91)	61.99 (21.84)	64.79 (23.21)	74.31 (19.59)	64.14 (22.01)
Positive/Negative Diff.	8.59 (27.36)	3.89 (28.06)	6.08 (26.17)	−3.02 (22.93)	3.71 (26.26)
Black Positive	65.45 (24.20)	66.22 (28.80)	71.56 (26.45)	70.17 (27.05)	68.43 (26.40)
White Positive	60.76 (26.55)	65.54 (29.47)	70.18 (25.57)	72.41 (24.78)	67.41 (24.78)
Black Negative	57.47 (27.75)	65.88 (26.03)	64.22 (28.94)	72.76 (24.81)	65.04 (27.48)
White Negative	51.56 (25.81)	58.11 (28.70)	65.37 (29.84)	75.86 (24.55)	63.24 (28.53)
Lie detection					
Overall	52.47 (11.62)	50.59 (11.57)	52.92 (10.05)	50.39 (11.37)	51.64 (11.21)
Lies	43.66 (18.52)	36.66 (21.63)	35.09 (21.62)	27.59 (19.20)	35.65 (20.89)
Truths	61.28 (17.70)	64.53 (20.27)	70.19 (20.68)	73.19 (20.68)	67.64 (19.92)
Positive	50.43 (16.42)	54.05 (16.44)	52.30 (14.55)	49.57 (15.48)	51.17 (15.75)
Negative	54.51 (16.83)	47.13 (15.70)	53.56 (14.84)	51.21 (15.33)	52.12 (15.90)
Positive Truths	63.54 (25.24)	69.93 (25.50)	73.17 (24.23)	70.86 (26.52)	69.01 (25.65)
Negative Truths	59.03 (24.31)	59.12 (28.24)	68.35 (27.56)	75.52 (25.25)	66.26 (26.90)
Positive Lies	37.33 (26.61)	38.18 (30.75)	31.42 (26.22)	28.28 (24.70)	33.32 (26.89)
Negative Lies	50.00 (26.28)	35.14 (25.48)	38.76 (27.53)	26.90 (24.49)	37.98 (27.40)
Black Pos. Truths	64.24 (35.31)	70.27 (34.04)	72.02 (32.94)	71.03 (34.19)	69.07 (34.28)
Black Pos. Lies	33.33 (33.45)	37.84 (37.75)	28.90 (34.22)	30.69 (31.83)	32.20 (33.88)
Black Neg. Truths	60.76 (36.05)	65.54 (34.05)	67.89 (34.37)	73.10 (33.34)	66.95 (34.77)
Black Neg. Lies	45.83 (37.16)	33.78 (35.22)	39.45 (36.69)	27.59 (30.58)	36.86 (35.50)
White Pos. Truths	62.85 (33.84)	69.59 (37.76)	74.31 (31.63)	70.69 (35.15)	68.96 (34.57)
White Pos. Lies	41.32 (35.15)	38.51 (37.51)	33.95 (34.61)	25.86 (30.68)	34.43 (34.57)
White Neg. Truths	57.29 (32.37)	52.70 (35.97)	68.81 (35.22)	77.93 (30.55)	65.57 (34.42)
White Neg. Lies	54.17 (36.21)	36.49 (37.29)	38.07 (37.21)	26.21 (33.89)	26.21 (33.89)
Confidence	68.94 (12.63)	65.86 (11.85)	62.61 (11.00)	68.02 (10.99)	66.71 (11.87)
Performance Expectancy	10.46 (3.13)	10.91 (3.06)	11.05 (3.18)	10.99 (3.14)	10.83 (3.14)
Expectancy Accuracy	−2.06 (3.62)	−2.81 (3.56)	−2.58 (3.70)	−2.92 (3.64)	−2.56 (3.64)

Judgmental Bias

On average, the participants rated 66% of all videos as truths ($SD = 17.06$). This value differed significantly from chance (50%) and indicated a truth bias, $t(471) = 20.373$, $p < .001$.

Contrary to our Bias Hypothesis, the IPIP correlated positively with truth bias, such that individuals with higher depression scores rated more statements as truth, $r = .231$, $p < .001$ (see also Table 2). Moreover, truth bias differed significantly between PHQ-9 groups, $F(3, 468) = 18.93$, $p < .001$, $\eta^2 = .108$, such that groups of more severe depression levels had higher levels of truth bias; see Table 3. Contrast analyses showed a significant difference between the PHQ-9 group of healthy and all other groups

(+3, −1, −1, −1) $t(468) = -5.738$, $p < .001$, with the healthy group rating less statements as truth, and a significant difference between the group of severely depressed and all other groups (−1, −1, −1, +3), $t(468) = 5.686$, $p < .001$, with the severely depressed group rating more statements as truth. Lastly, the CES-D showed a significant difference between groups of nondepressed ($M = 59.91$, $SD = 14.30$) and depressed ($M = 69.24$, $SD = 17.53$), $F(1, 470) = 34.267$, $p < .001$, $\eta^2 = .068$, such that individuals in the depressed group showed higher levels of truth bias; see Table 4.

Further analyses revealed that the valence of the statements (positive/negative) influenced the effect of depression on judgmental bias. For analyses with the IPIP, we created a difference measure by subtracting the truth bias

Table 4. Means (standard deviations) of truth bias, accuracy scores, judgment confidence (%), performance expectancy (0–16), and expectancy accuracy (overall detection accuracy minus performance expectancy) in detecting lies and truths depending on CES-D groups

Variable	DESC		Total <i>M</i> (<i>SD</i>)
	Nondepressed <i>M</i> (<i>SD</i>)	Depressed <i>M</i> (<i>SD</i>)	
Truth bias			
Overall	59.91 (14.30)	69.23 (17.53)	65.99 (17.06)
Black	62.50 (18.42)	68.99 (21.46)	66.74 (20.67)
White	57.32 (19.92)	69.48 (21.59)	65.25 (21.79)
Black/White Diff	5.18 (25.57)	−0.49 (24.97)	1.48 (25.30)
Positive	63.95 (21.56)	69.93 (20.48)	67.85 (21.03)
Negative	55.87 (19.55)	68.55 (22.00)	64.14 (22.01)
Positive/Negative Diff.	8.08 (29.59)	1.38 (24.03)	3.71 (26.26)
Black Positive	66.31 (25.32)	69.56 (26.94)	68.43 (26.40)
White Positive	61.59 (28.29)	70.29 (25.25)	67.27 (26.64)
Black Negative	58.69 (27.50)	68.43 (26.91)	65.04 (27.48)
White Negative	53.05 (26.39)	68.67 (28.19)	63.24 (28.53)
Lie detection			
Overall	51.83 (11.29)	51.54 (11.19)	51.64 (11.21)
Lies	41.92 (18.92)	32.31 (21.15)	35.65/20.89)
Truths	61.74 (17.50)	70.78 (20.44)	67.64 (19.92)
Positive	51.14 (16.02)	51.18 (15.63)	51.17 (15.75)
Negative	52.52 (16.63)	51.90 (15.53)	52.12 (15.90)
Positive Truths	65.09 (25.92)	71.10 (25.30)	69.01 (25.65)
Negative Truths	58.38 (24.34)	70.45 (27.29)	66.26 (26.90)
Positive Lies	37.20 (27.76)	31.25 (26.22)	33.32 (26.89)
Negative Lies	46.65 (26.92)	33.36 (26.56)	37.98 (27.40)
Black Pos. Truths	66.77 (35.15)	70.29 (33.80)	69.07 (34.28)
Black Pos. Lies	34.15 (34.48)	31.17 (33.56)	32.20 (33.88)
Black Neg. Truths	60.98 (35.48)	70.13 (34.01)	66.95 (34.77)
Black Neg. Lies	43.60 (35.53)	33.28 (35.01)	36.86 (35.50)
White Pos. Truths	63.41 (35.51)	71.92 (33.74)	68.96 (34.57)
White Pos. Lies	40.24 (35.84)	31.33 (33.53)	34.43 (34.57)
White Neg. Truths	55.79 (32.95)	70.78 (34.10)	65.57 (34.42)
White Neg. Lies	49.70 (37.36)	33.44 (36.35)	39.09 (37.47)
Confidence	68.67 (12.19)	65.67 (11.58)	66.71 (11.87)
Performance Expectancy	10.63 (3.07)	10.93 (3.17)	10.83 (3.14)
Expectancy Accuracy	−2.34 (3.64)	−2.68 (3.64)	−2.56 (3.64)

for negative statements from the truth bias for positive statements. The IPIP showed a significant correlation with the difference measure, $r = -.153$, $p = .001$, indicating that the positive effect of IPIP depression on truth bias was bigger in negative statements. In addition, a mixed-model 4 (PHQ) \times 2 (Valence) variance analysis revealed significant main effects for PHQ-9, $F(3, 468) = 18.933$, $p < .001$, $\eta^2 = .108$, and Valence, $F(1, 468) = 9.848$, $p = .001$, $\eta^2 = .021$, such that positive statements were rated more often as truth and a significant interaction, $F(3, 468) = 5.269$, $p = .001$, $\eta^2 = .033$, indicating that groups with less depressive symptoms rated positive statements more often as truth (see Figure 1). Another 2 (CES-D) \times 2 (Valence) mixed-model variance analysis revealed a significant main effect for the CES-D, $F(1, 470) = 34.267$, $p < .001$, $\eta^2 = .068$,

a significant main effect for Valence, $F(1, 470) = 14.066$, $p < .001$, $\eta^2 = .029$, and a significant interaction, $F(1, 470) = 7.056$, $p = .008$, $\eta^2 = .015$, indicating that the difference in truth bias between positive and negative statements was lower in the depressed group: see Figure 1.

Racial Bias

Overall, the number of videos judged as true did not significantly differ between Black ($M = 66.74$, $SD = 20.67$) and White targets ($M = 65.25$, $SD = 65.25$), $t(471) = 1.274$, $p = .203$. To test our Racial Bias Hypothesis with the IPIP, we calculated a difference measure by subtracting the truth bias for White targets from the truth bias for Black targets. Aligned with our hypothesis, the IPIP showed a significant

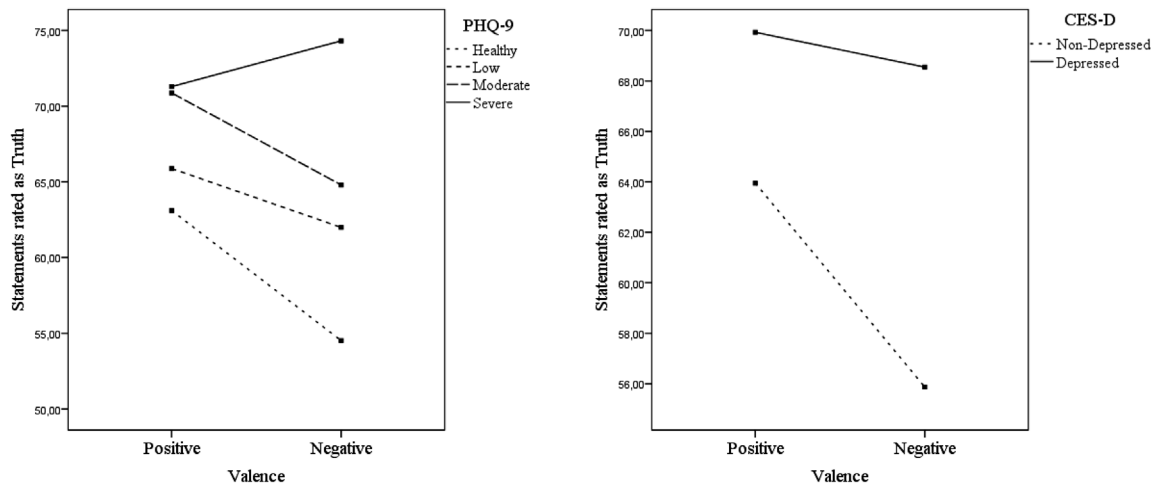


Figure 1. Interaction of valence and depression measures with truth bias as a criterion. Results of mixed-model variance analyses, with depression and valence as predictors and truth bias as a criterion. Truth bias is presented as a percentage of statements rated as truth.

negative correlation with the difference measure, $r = -.096$, $p = .037$, meaning a lower difference in truth bias for Black and White targets in participants with higher IPIP scores. Furthermore, a mixed-model variance analysis with the within-subject factor target race and the between-subject factor PHQ-9 revealed no significant main effect for Target Race, $F(1, 468) = 2.096$, $p = .148$, $\eta_p^2 = .004$, a significant main effect for the PHQ-9, $F(3, 468) = 18.93$, $p < .001$: More severe depression groups had higher levels of truth bias, $\eta_p^2 = .108$, and a significant interaction aligning with our Racial Bias Hypothesis, $F(3, 468) = 2.822$, $p = .038$, meaning that a heightened truth bias for Black targets was found in the healthy group but decreased in higher groups of depression; see Figure 2. A 2 (CES-D) \times 2 (Target race) mixed-model variance analysis resulted in a nonsignificant main effect for Target Race, $F(1, 470) = 3.722$, $p = .054$, $\eta_p^2 = .008$, a significant main effect for the CES-D, $F(1, 470) = 34.267$, $p < .001$, $\eta_p^2 = .068$, such that the group of depression had a higher level of truth bias and a significant interaction also aligning with our hypothesis, $F(1, 470) = 5.426$, $p = .020$, $\eta_p^2 = .011$, showing a heightened truth bias for Black targets in the nondepressed group but not in the depressed group (see Figure 2).

Detection Accuracy

Overall detection accuracy was, on average, 51.64% ($SD = 11.21$). This value differed significantly from what would be expected by chance (50%), $t(471) = 3.182$, $p = .002$. There was no significant difference between the accuracy at identifying positive statements ($M = 51.17$, $SD = 15.75$) and negative statements ($M = 52.12$, $SD = 15.90$), $t(471) = -0.927$, $p = .354$.

Analyses with the IPIP Depression Measure

In contrast to our Accuracy Hypothesis, the results showed no significant correlation between overall accuracy and

IPIP, $r = -.062$, $p = .178$. To test our Statement Valence Hypothesis with the IPIP, we calculated a difference measure by subtracting the overall accuracy for negative statements from the overall accuracy for positive statements. In contrast to our Statement Valence Hypothesis, the IPIP did not significantly correlate with the difference measure, $r = .028$, $p = .547$, nor did it correlate with the number of correctly identified positive, $r = -.024$, or the negative statements, $r = -.063$, $p = .170$.

Analyses with the PHQ-9 Depression Measure

In contrast to our Accuracy Hypothesis, a variance analysis with the PHQ-9 revealed no significant difference in overall detection accuracy, $F(3, 468) = 1.567$, $p = .197$, $\eta^2 = .010$. Contrast analyses showed no difference between the healthy group and all other groups, $t(468) = 1.036$, $p = .301$, nor between the severely depressed group and all other groups, $t(468) = -1.411$, $p = .159$.

To test our Statement Valence Hypothesis with the PHQ-9, we used a mixed-model ANOVA with the within-subject factor Valence, which also revealed a significant main effect for PHQ-9 neither for overall detection accuracy, $F(3, 468) = 1.567$, $p = .197$, $\eta_p^2 = .010$, nor for Valence, $F(1, 468) < .001$, $p = .990$, $\eta_p^2 < .001$. However, the interaction between PHQ-9 and Valence was significant, $F(3, 468) = 4.140$, $p = .007$, $\eta_p^2 = .026$; see Figure 3. Further analyses revealed that the difference between PHQ-9 groups in overall detection accuracy is significant in negative statements, $F(3, 468) = 4.050$, $p = .001$, $\eta_p^2 = .025$, with higher accuracy in depressed participants, but not significant in positive statements, $F(3, 468) = 1.622$, $p = .163$, $\eta_p^2 = .010$, therefore going against the hypothesized direction.

Analyses with the CES-D Depression Measure

In contrast to our Accuracy Hypothesis, a variance analysis with the CES-D depression measure revealed no significant

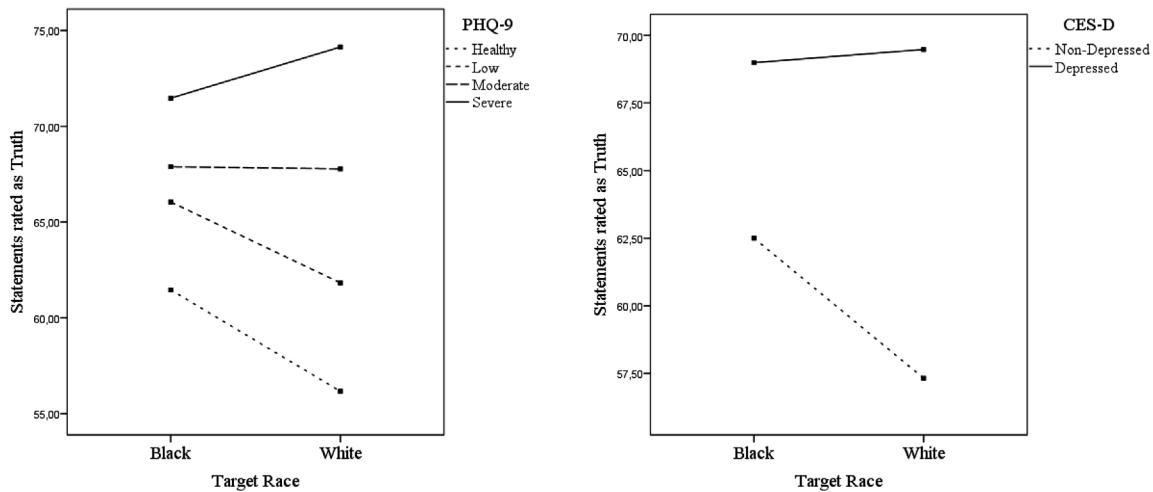


Figure 2. Interaction of target race and depression measures with truth bias as a criterion. Results of mixed-model variance analyses, with depression and target race as predictors and truth bias as a criterion. Truth bias is presented as a percentage of statements rated as truth.

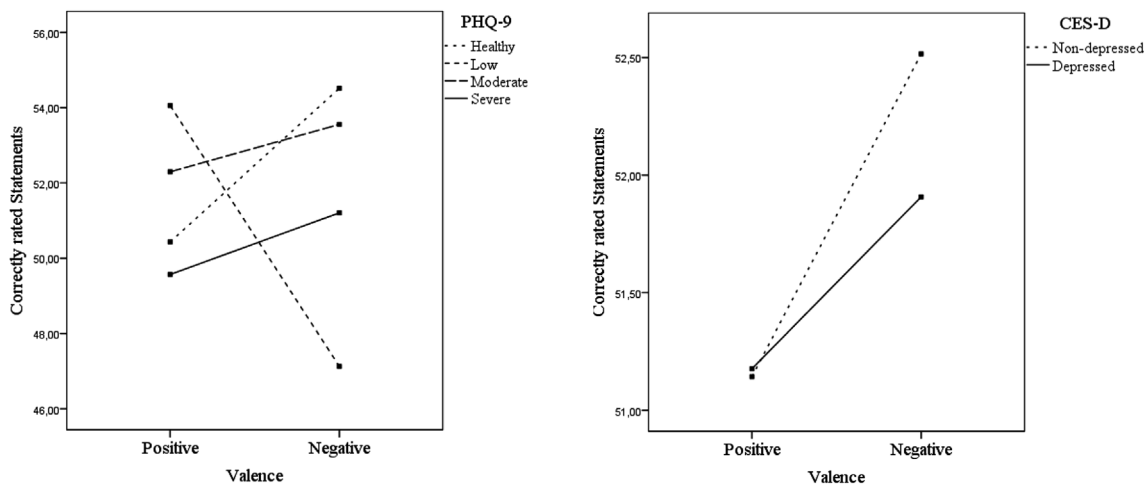


Figure 3. Interaction of valence and depression measures with overall accuracy as a criterion. Results of mixed-model variance analyses, with depression and valence as predictors and overall rating accuracy as a criterion. Overall rating accuracy is presented as a percentage of statements rated correctly.

difference between nondepressed ($M = 51.83, SD = 11.29$) and depressed ($M = 51.54, SD = 11.19$), $F(1, 470) = .070, p = .791, \eta^2 < .001$.

A mixed-model analysis adding the factor Valence revealed no significant difference in overall accuracy between CES-D groups, $F(1, 470) = .070, p = .791, \eta_p^2 < .001$, no main effect of Valence, $F(1, 470) = .946, p = .331, \eta_p^2 = .002$, and no significant interaction between CES-D and Valence, $F(1, 470) = .088, p = .767, \eta_p^2 < .001$; see Figure 3.

Judgmental Confidence

Confidence averaged over all videos (ranging from 9.44 to 100.00, $M = 66.72, SD = 11.87$) did not significantly correlate with overall detection accuracy, $r = -.066, p = .154$.

Also, there was no significant difference between the confidence for White targets ($M = 66.69, SD = 12.26$) and Black targets ($M = 66.73, SD = 12.45$). However, a difference measure that subtracted overall confidence for White targets from Black targets correlated with the difference measure for truth bias between Black and White targets, $r = .196, p < .001$, implicating heightened confidence in classifications of statements by Black targets for participants with a heightened truth bias for Black targets.

In alignment with our Confidence Hypothesis, the IPIP scores correlated significantly with Confidence, $r = -.153, p = .001$, such that individuals with higher IPIP scores reported lower confidence in their ratings. Moreover, there was a significant difference between PHQ-9 groups, $F(4, 768) = 7.010, p < .001, \eta^2 = .043$, such that the healthy group reported higher confidence in their ratings; see

Table 3. Contrast analyses showed a significant difference between the healthy group and all other groups, such that the healthy group reported significantly higher confidence in their ratings than all other groups, $t(468) = 2.927, p = .004$, and a nonsignificant difference between the severely depressed group and all other groups, $t(468) = 1.880, p = .061$. Also, the CES-D group of depressed participants was significantly less confident ($M = 65.67, SD = 11.58$) than the group of nondepressed participants ($M = 65.67, SD = 11.58$), $F(1, 470) = 6.884, p = .009, \eta^2 = .014$; see also Table 4.

Detection Ability Estimations

We tested the Expectancy Accuracy Hypothesis with the two variables of Self-evaluation and Performance expectancy. In Self-evaluation, 38 participants rated their lie-detection ability as below average, 326 as average, and 108 as above average. IPIP scores were significantly different between Self-evaluation groups of below average ($M = 27.24, SD = 8.12$), average ($M = 27.59, SD = 8.07$), and above average ($M = 24.11, SD = 8.24$), $F(2, 469) = 7.504, p = .001, \eta^2 = .031$, such that individuals that made a self-evaluation of above average had lower IPIP scores. The difference in Self-evaluation between PHQ-9 groups was not significant, $\chi^2(6, N = 472) = 11.992, p = .062, V = .113$; however, the difference in Self-evaluation between CES-D groups was significantly different, $\chi^2(2, N = 472) = 8.346, p = .015, \phi = .133$.

To test our Expectancy Accuracy Hypothesis with the Self-evaluation variable and the IPIP, we indicator-coded Self-evaluation, resulting in the focal predictors “average” and “above average” and performed a multiple regression, with IPIP as moderator and overall detection accuracy as criteria. Overall, the amount of explained variance was not significant, $R^2 = .100, p = .453$, nor were the focal predictors of “average” and “above average,” $b_{\text{average}} = 1.463, t(466) = 0.215, p = .830, 95\% \text{ CI } [-11.931; 14.858]$, $b_{\text{above average}} = -2.4029, t(466) = -0.331, p = .741, 95\% \text{ CI } [-16.931; 11.874]$; nor was IPIP as predictor, $b_{\text{IPIP}} = -0.074, p = .745, t(466) = -0.326, 95\% \text{ CI } [-0.520; 0.372]$. The interaction of “average” and IPIP was not significant, $b_{\text{IPIP} \times \text{average}} = -0.050, p = .835, t(466) = -0.209, 95\% \text{ CI } [-0.521; 0.421]$. Neither was the interaction of “above average” and IPIP, $b_{\text{IPIP} \times \text{above average}} = 0.023, t(466) = 0.086, p = .931, 95\% \text{ CI } [-0.493; 0.538]$. In a 3 (Self-evaluation) \times 4 (PHQ-9) between-subject variance analysis with overall detection accuracy as dependent variable, there were no main effects for either PHQ-9, $F(3, 460) = 0.699, p = .553, \eta^2 = .007$, Self-evaluation, $F(2, 460) = 1.229, p = .293, \eta^2 = .005$, and no significant interaction between PHQ-9 and Self-evaluation, $F(6, 460) = 0.558, p = .764, \eta^2 = .007$. A 3 (Self-evaluation) \times 2 (CES-D) between-subject variance analysis revealed no significant

main effects for CES-D, $F(1, 466) = 0.175, p = .676, \eta^2 < .001$, or Self-evaluation, $F(2, 466) = 0.998, p = .369, \eta^2 = .004$, nor a significant interaction between Self-evaluation and CES-D, $F(2, 466) = 0.021, p = .979, \eta^2 < .001$.

Performance Expectancy ranged from 0 to 16 videos ($M = 10.83, SD = 3.14$). Performance Expectancy correlated significantly with judgmental confidence, $r = .316, p < .001$, such that individuals who reported higher confidence in their judgments had a higher performance expectancy. It also correlated with truth bias, $r = .220, p < .001$, such that individuals with higher performance expectancy had a higher truth bias but not with overall detection accuracy, $r = -.018, p = .698$. The IPIP did not significantly correlate with Performance Expectancy, $r = .006, p = .901$. Moreover, Performance Expectancy did not differ between PHQ-9 groups, $F(3, 466) = 0.990, p = .397, \eta^2 = .006$. Contrast analyses revealed no significant difference between the healthy group and all other groups, $t(466) = -1.648, p = .100$, nor between the severely depressed group and all other groups, $t(466) = 0.597, p = .551$. Neither did Performance Expectancy differ among CES-D groups, $F(1, 468) = 0.959, p = .328, \eta^2 = .002$.

To test our Expectancy Accuracy Hypothesis with the Performance Expectancy measure, we created a difference measure (Expectancy Accuracy) by subtracting the expected number of correctly judged videos from the actual number of correctly judged videos. Against our prediction (Expectancy Accuracy Hypothesis), Expectancy Accuracy (ranging from -11 to $9, M = -2.56, SD = 3.64$) did not significantly correlate with the IPIP, $r = .006, p = .901$. Nor was there a difference between PHQ-9 groups, $F(3, 466) = 1.492, p = .216, \eta^2 = .010$. Contrast analyses revealed no significant difference between the healthy group and all other groups, $t(466) = 1.924, p = .055$, nor a significant difference between the severely depressed group and all other groups, $t(466) = -1.191, p = .234$. There was also no significant difference between CES-D groups, $F(1, 468) = 0.921, p = .338, \eta^2 = .002$.

Discussion

Judgmental Bias and Depressive Realism

The depressive realism hypothesis suggests that depressed (or rather dysphoric) individuals (see Moore & Fresco, 2012) see the world more realistic than the nondysphoric do (Alloy & Abramson, 1979). In the lie-detection setting, we assumed this would indicate a lesser truth bias for dysphoric individuals (Truth Bias Hypothesis). However, our results did not align with our truth-bias hypothesis, and using three different assessment measures of depression suggests that dysphoric individuals show more of a truth

bias than their nondysphoric counterparts. A study by Martin et al. (1984) found that depressed individuals do not succumb to the illusion of control when assessing their own influence but do so with others, which aligns with our results. The effect was moderated by the valence of the statements: Depressed individuals rated statements more often as true when the targets depicted an acquaintance negatively. This finding implies that depressed individuals might have a mood-congruent bias, as Weightman et al. (2014) described in their interpretation of cognitive stimuli.

Racial Bias and Depressive Realism

Lloyd et al. (2017) found that statements made by Black targets were more often rated as true than statements made by White Targets. Furthermore, they found that individuals with a primarily internal motivation to regulate racial prejudice had the highest racial truth bias, which might be interpreted as a rating behavior that protects a positive self-view. We assumed that dysphoric individuals would be less motivated to regulate racial prejudice because of this internal motivation having a self-view-regulating effect and depressed individuals having an overall negative self-view. Our study revealed no overall heightened truth bias for Black targets. However, as our Racial-Realism Hypothesis predicted, the racial truth bias effect interacted with all three depression measures. Dysphoric individuals had a less heightened truth bias for Black targets than did nondepressed individuals. This effect can be called a depressive realism effect, as a self-view protecting bias did not distort the proportions of truth and lie ratings. We should mention, however, that, because of the length of our study, we did not assess concerns about being prejudiced. Future studies should test whether the importance of the internal motivation to not be prejudiced is responsible for the difference between dysphoric and nondysphoric individuals in the racial truth bias.

Detection Accuracy and Depressive Realism

In contrast to our accuracy hypothesis, which suggests a heightened overall detection accuracy in dysphoric individuals, there was no significant difference in overall detection accuracy between dysphoric and nondysphoric individuals on any of the depression assessment scales. Therefore, our results do not support the depressive realism hypothesis in the perception of others. Our Statement Valence Hypothesis suggested an interaction of statement valence and depression, such that the overall rating accuracy would have been higher in positive statements than in negative statements. Overall detection accuracy was higher in

positive statements than in negative statements for all participants. However, this effect did not interact with the IPIP depression score or the CES-D. Only on the PHQ-9 was the interaction of depression and valence significant, with only the low-depression group having a higher accuracy on positive than negative statements (see also Benz & Reinhard, 2021). Because the results did not differ among all depression scales, the results do overall not support a heightened accuracy for depressed participants for any lies and do not align with the results of Lane and DePaulo (1999). While our results might challenge Lane and DePaulo's explanation of their results as a heightened sensitivity for phony reassurances with the alternative explanation of a mood-congruent bias, Lane and DePaulo investigated the perception of honest and dishonest statements with the intent to enhance social interactions. The statements the targets made in this study reveal honest or dishonest statements about associates they either liked or disliked, without such intent. Future studies should investigate whether one would find heightened detection accuracy in lies with the intent to enhance social relations.

Confidence, Self-evaluation of Lie-Detection Ability and Depressive Realism

Our Confidence Hypothesis suggested that, in line with the depressive realism hypothesis, the participants would not be as sure about their ability to detect lies and would therefore believe less in the reliability of their veracity judgments. In alignment with this, the average confidence measure was lower among dysphoric participants on all depression measurement scales.

Our Expectancy Accuracy Hypothesis suggested a more realistic perception in dysphoric participants of their lie-detection ability and thus resembled previous investigations on depressive realism more closely. As with the confidence measure analyses, dysphoric participants had lower performance expectations on all depression scales. However, analyses investigating whether these assessments were more accurate failed to confirm the Expectancy Accuracy Hypothesis and therefore question the depressive realism view in self-perception.

Limitations

The first limitation lies in our recruitment process. Because of the relatively low payment for participation, there might have been a risk of careless responders reducing the quality of our sample. Also, one should interpret our results concerning the racial bias effect with care, as we did not assess concerns about being prejudiced. Further studies should investigate whether reduced motivation is unprejudiced in individuals with depressive symptoms.

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Open Data

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