Motive Perception at First Impressions: On the Relevance of Targets' Explicit and Implicit Motive Dispositions

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Abstract

When people judge the motive dispositions of unacquainted others, are their judgments accurate representations of the targets' explicit motives, their implicit motives, or both? To address this question, we assessed target persons' explicit motives via self-report and their implicit motives via a Picture Story Exercise as well as two recently developed affective contingency-based measures. Targets were then filmed during a short, casual conversation. The recordings were shown to thirty unacquainted observers who judged targets' affiliation, power and achievement motives. For all three motives, observer ratings were linked to explicit motives. For the affiliation and achievement domains, ratings were also linked to implicit motives. We further investigated whether the extent of congruence between observer ratings and motive ratings would depend on information modality, this was not the case. The findings thus indicate that both explicit and implicit motives are relevant for observer judgments, but that these effects are not modality-specific.

Keywords

personality perception, dual-motive theory, motive dispositions, implicit motives, first impressions

> **Relevance Statement**
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> The present research is the first to explore the relevance of motive-duality on strangers' assessments. It sheds new light on the assessment and conceptualization of implicit motives as well as on their interpersonal consequences.
>
> **Key Insights**
> - Strangers can deduce other's motives from short interactions
> - Both implicit and explicit motives contribute to the impression
> - Unexpectedly, this effect is not modality-specific

To a greater extent than other animals, humans are able to understand others' desires, which enables them to form alliances and adjust their own behavior to their interaction partners (Tomasello, 2019). But how far does this capacity go? In many life domains, people seek to estimate the motive dispositions of unacquainted others. For example, an employer might want to find out about the applicant's achievement motive and a person on a first date might care a great deal about how affiliation- or power-oriented their dating partner is. Studies have shown above-chance levels of accuracy when people judge strangers' intelligence (Reynolds & Gifford, 2001) or personality traits (Borkenau & Liebler, 1992). But how accurate are people at estimating the motive dispositions of strangers?

Motives dispositions describe the recurrent aspiration toward specific classes of incentives; they guide the selection, orientation, and execution of incentive-oriented behavior (McClelland, 1980). Most research focuses on the desires to initiate and maintain positive social relationships (affiliation motive), to influence and lead others (power motive), and to reach or excel one's personal standards (achievement motive). In a recent study, Wallace and Biesanz (2021) studied the accuracy of motive perception and found that observers can judge newly met targets' motive profiles with above chance level accuracy when a composite score averaging across motive self- and informant-reports was used as a benchmark criterion. What is unknown to date, however, is to what extent observer evaluations might also be affected by implicit aspects of motive dispositions.

Whereas explicit motives describe conscious representations of motive dispositions and can be assessed via self-report questionnaires, implicit motives represent aspects of motive dispositions that lie beyond people's explicit motive self-concepts (McClelland et al., 1989; Schultheiss et al., 2008). Traditionally, implicit motives are assessed with the Picture Story Exercise (PSE), a projective test requiring participants to write fictitious stories based on ambiguous pictorial cues that are then content-coded (Schultheiss & Pang, 2007). Even though the PSE is the most popular measure of implicit motives, it has been criticized on psychometric grounds (Entwisle, 1972; but see Lang, 2014).

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An alternative, recently developed approach (Dufner et al., 2015, 2018) taps more directly into motive-specific positive affective contingencies (PACs). In the broader literature, the label "implicit" is sometimes used to refer to individuals' tendency to systematically respond with spontaneous, physiologically-based affect to specific classes of objects (e.g., Lee et al., 2018). In implicit motive theory, it is assumed that people respond with spontaneous positive affect to motive-specific incentives, such as for example, social inclusion in the case of the affiliation motive (McClelland et al., 1989). Accordingly, the PAC approach works by presenting participants pictures of positive motive-specific incentives and assessing their positive affective reactions, either by having them rate their affective experience (Dufner et al., 2018) or by directly measuring facial muscular activity that is indicative of subtle smiling via EMG (Dufner et al., 2015, 2018). Both rating-based and EMG-based PAC measures overlapped only weakly with PSE scores in past research, but predicted motive-relevant outcomes beyond both PSE scores and explicit motive self-reports (Dufner et al., 2015, 2018). This pattern questions the conventional idea that what lies beyond explicit motive self-reports is a unitary implicit motive construct that can only be assessed via operant measures, such as the PSE. Instead, motive-specific PACs appear to tap into implicit aspects of motive dispositions, but ones that are distinct from what the PSE measures.

What does the pathway linking motive dispositions to observer-evaluations look like? According to Funder's (1995) realistic accuracy model, observers can correctly infer a target's personality if all of the following conditions are met: The situational context must be trait-relevant, so that the investigated disposition produces a behavioral effect, the behavioral cues must be available to the observers, and they must be detected and correctly utilized by them. With regard to trait relevance, the model implies that both explicit and implicit motives can only affect observer judgements if they are aroused, which typically happens through verbal and nonverbal stimuli respectively (Schultheiss & Köllner, 2021). Regarding availability, the model implies that explicit and implicit motives should affect observer judgments to the extent that the behavioral cues that originate from them are available for the observers.

According to the dual lens model (Hirschmüller et al., 2013), explicit dispositions give rise to controlled behavior and implicit dispositions to spontaneous behavior, and many findings from the motive literature stand in line with these proposals (e.g., Fodor et al., 2010; McAdams et al., 1984). Importantly for the current context, in a study by Hagemeyer et al. (2016), the explicit affiliation motive has been linked to verbal behavior and the implicit motive to nonverbal behavior (Hagemeyer et al., 2016). Given that nonverbal behavior is typically more automatic than verbal behavior (Lakin, 2006), these results also match the dual lens model. The findings also indicate that when the cues that are available for observers are manipulated, this should have an impact on how strongly explicit and implicit motives are linked to observer judgments. When only verbal cues

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are available, the links should be especially strong for explicit motives and when only nonverbal cues are available, they should be stronger for implicit motives.

In the present research, we tested the hypothesis that at first impressions, motive observer evaluations are linked to targets' explicit and implicit motives, when visual and auditory information is available. We further hypothesized that the relations between explicit motives and observer judgments are stronger when only auditory information is provided than when only visual information is provided. Conversely, we predicted that the relations between implicit motives and observer judgments are stronger when only visual information is provided than when only auditory information is provided.

Method

The hypotheses and analyses have not been pre-registered and are thus to be regarded as exploratory. The data and code necessary to reproduce the results are provided in the Supplementary Materials.

Design and Participants

The target persons were taken from a comprehensive study that was designed to address several research questions. Parts of the data were also investigated in previous publications, which dealt with different research questions (for a list, see Supplement S1). The study was approved by the institutional review board of Humboldt University in Berlin, Germany. Only the study parts that are relevant for the current research question will be described.

Because a central goal of the overarching study was to investigate personality development at the transition from university to work life, data were collected in two waves approximately 14 months apart. Each wave consisted of several online questionnaires, a laboratory session, and a two-week daily diary assignment. All targets were university students, who at Wave 1 were in the final stages of their studies. As an incentive, all participants received a monetary compensation of 120€ and feedback about their personality.

At the end of the Wave 2 laboratory session, the experimenter started an ostensibly casual conversation. Participants were unaware that these conversations were part of the investigation (they were debriefed afterwards and all participants consented that their videos could be analyzed for research purposes; none of the participants had expressed suspicion during the conversations). The conversations were structured by five questions of the experimenter that were aimed at eliciting personality-relevant information. Precisely, the experimenter asked how the participants liked the experiment, whether they felt like they had personally gained anything from the study, whether they had finished their studies yet, how they felt about their current situation and what their future plans

for the future are (see Dufner et al., 2015, for details). The conversation was recorded on videotape. A total of 209 persons participated in the overarching study. Because of a technical malfunction, the planned interactions were recorded only for 123 participants. After excluding four videos deemed too short (< 1 minute) or too long (> 20 minutes), our target persons' sample consisted of 119 participants (66% female) with a mean age of 27.32 years (*SD* = 2.92 years) at Wave 1. We showed these video recordings (average length: 2:58 min; *SD* = 2:10 min; Min = 1min 8s; Max = 19min 22s; 88% of the videos were five minutes long or shorter) to a group of observers who then rated targets' motive dispositions (see below).

Measures

An overview of all measures of the large-scale study can be found in the Supplementary Materials (codebook). Because our aim was to gain reliable indicators of stable individual differences (rather than indicators of state motivation; see Steyer et al., 1999) and to stay consistent with the methodological approach taken in previous publications that are based on the same data (Dufner et al., 2015, 2018), we aggregated all motive measures across the two waves[1] (retest correlations are provided in Table 1).

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1) We provide results separately for the two waves in Table S4 of the Supplementary Materials. As can be seen there, for most variables, the pattern of results was similar across the two measurements.

Table 1

Descriptive Statistics, Reliabilities and Intercorrelations of and Between Measures of Explicit Motives and Measures of Implicit Motives

Measure	M(SD)	α	RR	PRF Aff	PRF Pow	PRF Ach	UMS Aff	UMS Pow	UMS Ach	XMS Aff	XMS Pow	XMS Ach	COMP Aff	COMP Pow	COMP Ach	PSE Aff	PSE Pow	PSE Ach	PAC_rat Aff	PAC_rat Pow	PAC_rat Ach	PAC_EMG Aff	PAC_EMG Pow	PAC_EMG Ach
Measures of explicit motives																								
PRF																								
Affiliation	3.72(.53)	.79	.78																					
Power	3.11(.67)	.86	.83	.23*																				
Achievement	3.40(.54)	.76	.73	.15	.38***																			
UMS																								
Affiliation[a]	0.00(1.00)	.80	.71	**.86*****	.13	.02																		
Power	2.84(.91)	.91	.78	.15	**.83*****	.43***	.04																	
Achievement	3.67(.66)	.82	.63	.20*	.31***	**.67*****	.14	.39***																
XMS																								
Affiliation	3.90(.59)	.82	.80	**.37*****	.01	.03	**.49*****	.14	.14															
Power	3.22(.66)	.85	.60	.13	**.44*****	.25*	.13	**.63*****	.28**	.47***													
Achievement	4.05(.56)	.85	.57	.06	.00	**.23***	.07	.16	**.35*****	.52***	.49***												
COMP																								
Affiliation[a]	0.00(.80)			**.89*****	.15	.08	**.92*****	.13	.19*	**.72*****	.29**	.26*												
Power[a]	0.01(.81)			.20*	**.89*****	.41***	.12	**.94*****	.36***	.23*	**.77*****	.23*	.22*											
Achievement[a]	0.00(.71)			.17	.30***	**.82*****	.10	.42***	**.86*****	.28*	.43***	**.66*****	.23*	.43***										
Measures of implicit motives																								
PSE																								
Affiliation	0.00(.34)	.48	.33	**.22***	.16	.05	**.21***	.13	.20*	**.14**	.19*	.16	**.23***	.19*	.17									
Power	0.01(.33)	.49	.40	-.11	**-.01**	-.05	-.03	**.07**	-.03	.01	**.05**	-.06	-.06	**.04**	-.06	.04								
Achievement	0.00(.34)	.48	.42	.11	-.03	**-.02**	.10	-.02	**.10**	.03	.15	**.11**	.10	.03	**.08**	.26**	.17							

Intercorrelations

Measure	M(SD)	α	RR	PRF Aff	PRF Pow	PRF Ach	UMS Aff	UMS Pow	UMS Ach	XMS Aff	XMS Pow	XMS Ach	COMP Aff	COMP Pow	COMP Ach	PSE Aff	PSE Pow	PSE Ach	PAC_{rat} Aff	PAC_{rat} Pow	PAC_{rat} Ach	PAC_{EMG} Aff	PAC_{EMG} Pow	PAC_{EMG} Ach
Measures of explicit motives spans PRF–COMP; **Measures of implicit motives** spans PSE–PAC_{EMG}																								
PAC_{rat}																								
Affiliation	3.54(.76)	.78	.73	**.28****	.04	.11	**.24***	.15	.19*	**.28****	.19*	.20*	**.32****	.13	.21*	**.33*****	.00	.23*						
Power	2.34(.65)	.58	.60	.09	**.17**	.11	.00	**.24****	.15	.02	**.21***	.11	.05	**.22***	.16	.06	**-.06**	.13	.50***					
Achievement	3.39(.76)	.75	.73	.22*	.15	**.17**	.15	.25**	**.25****	.14	.30*	**.22***	.21*	.25*	**.27****	.24*	.05	**.20***	.75***	.66***				
PAC_{EMG}																								
Affiliation	0.01(1.09)	.78	.50	**.36*****	.14	.08	**.36*****	.11	.05	**.10**	.15	.04	**.33*****	.16	.07	**.25****	.03	.24**	**.33*****	.05	.19*			
Power	-0.02(.84)	.33	.01	.13	**.17**	.20*	.10	**.10**	.10	-.08	**-.03**	-.03	.06	**.10**	.12	.09	**-.06**	-.03	.08	**.25***	.09	.22*		
Achievement	0.00(.90)	.65	.37	.24**	.24**	**.11**	.22*	.18*	**.06**	.01	.10	**.05**	.20*	.21*	**.09**	.20*	.06	**.09**	.22*	.16	**.26***	.60***	.36***	

Note. α = Cronbach's alpha across the two waves; RR = Retest Reliability; Aff = Affiliation Motive; Pow = Power Motive; Ach = Achievement Motive; PRF = Personality Research Form; UMS = Unified Motive Scales; XMS = Explicit Motive Scales; COMP = Explicit Motives Composite Score; PSE = Picture Story Exercise scores; PAC_{rat} = Positive Affective Contingencies, assessed via Affect Ratings; PAC_{EMG} = Positive Affective Contingencies, assessed via Electromyography. Within-motive correlations printed in bold type.

[a]Measures are calculated with scaled values.

*p < .05. **p < .01. ***p < .001.

Measures of Explicit Motives

Aiming for a comprehensive assessment of the approach component of explicit motives, we measured them via three self-report questionnaires. First, we used the affiliation, dominance and achievement scales of the German version (Stumpf et al., 1985) of the Personality Research Form (PRF; Jackson, 1967). Each subscale consists of ten statements that are commonly answered using a dichotomous response format (*applies/doesn't apply*). However, we instructed participants to answer on a 6-stage Likert scale (1 = *does not apply at all*, 6 = *fully applies*) to elicit a broader range of responses (Schönbrodt & Gerstenberg, 2012).

The second measure of explicit motives were the affiliation, dominance and achievement subscales from the Unified Motives Scales (UMS-6; Schönbrodt & Gerstenberg, 2012). The scales were derived from an item-response analysis of several established motive scales, including the PRF. The affiliation scale contained two items that were also included in the PRF. Due to a technical error, the highest response category (6 = *fully applies*) was not displayed for the UMS and PRF at Wave 1, nor for the items contained in both the UMS and PRF at Wave 2. Thus, the corresponding item values could only range between 1 = *does not apply at all* and 5 = *applies to a fair extent*, rather than between 1 and 6. Such a change in response format is likely to lower the overall mean but does not affect individuals' relative position (i.e, persons with the highest motives still have the highest values). Thus, aggregation was still possible. However, we had to transform the affiliation items to the same scale before we could compute a composite score. We did so via z-transformation.

Lastly, we also used additional self-constructed scales henceforward called XMS (eXplicit Motive Scales), which measure a person's tendency to derive pleasure from motive-related events on ten items per motive disposition (see Grapsas et al., 2022, for a scale validation). A sample item from the affiliation motive scale is "It makes me unhappy when other people avoid me."

Measures of Implicit Motives

To assess implicit motives, we used a variant of the Picture Story Exercise (PSE) and two affective contingency-based measures. In order to minimize fatigue and systematic state effects, the PSE was not administered in a single session, but as part of the daily diary task, with participants writing one story per day. Using the standard instructions by Pang and Schultheiss (2005), participants were presented with one (of 14 in total) picture each day and instructed to write a story in response (for details on the pictures used, see Dufner et al., 2015). Each picture appeared on the screen for ten seconds and participants were requested to write for four to five minutes about it. The finding that Hagemeyer et al. (2016) could successfully replicate the findings by McAdams et al. (1984) with data from the current study speaks for the validity of the PSE assessments.

Participants' stories were scored by trained coders (four coders at Wave 1, two coders at Wave 2; the number of coders differed because fewer research assistants were available at Wave 2), each with a different subset of stories, using Winter's (1994) coding system. For all participants of the larger study, absolute intercoder-agreement (two-way random ICC) was .93 for Affiliation, .70 for Power and .85 for Achievement (based on 93 stories; Dufner et al., 2015). We calculated the average score for each motive per story, partialed out the word count to control for story length and continued our analyses with the standardized residuals (Pang, 2010).

To measure affective contingencies, we presented pictures displaying positive motive-relevant cues during the laboratory session. For example, we presented a championship trophy as a positive cue for the achievement motive, two children holding hands as a positive cue for the affiliation motive, and Superman striking a pose as a positive cue for the power motive. A pretest on the validity of the stimuli showed that motive content ratings were always highest for the corresponding picture class (Dufner et al., 2015). Each picture remained on the screen for 4 s and was preceded by a fixation cross which appeared for 1 s. As the first affective contingency-based measure, we used participants' affective responses to the picture cues, as assessed via affect ratings. That is, after participants had seen a picture, they rated the extent to which they had experienced positive emotions while watching it ("I had positive feelings while watching this picture"; 1 = *do not agree at all* to 5 = *agree totally*). We will refer to this measure as PAC_{rat}.

As the second affective contingency-based measure, we assessed participants' facial reactions while viewing the pictures, using EMG. That is, for each picture we assessed participants' tendency toward smiling by recording the muscular activity of the *zygomaticus* (high activation during smiles) and the c*orrugator* (low activation during smiles) with a reference electrode on the forehead. We then computed the mean muscular activities during ms 1001–4000 of picture presentation and partialed out the baseline muscular activity (recorded while presenting a video of a calm beach scene). We aggregated the baseline-corrected zygomaticus and corrugator scores across all pictures from a given motive domain and then subtracted corrugator activity from zygomaticus activity (for further details, see Dufner et al., 2015) to calculate the overall EMG scores. We will refer to this measure as $PAC_{EMG.}$

Motive Ratings at First Impressions

To obtain motive ratings, we presented the video recordings of the casual dyadic interaction to a group of observers. To increase the reliability of the judgments, we had them made by multiple observers in each condition. Meta-analytic findings on personality judgments in different domains indicate that if judgments are aggregated across 10 raters or more, reliable scores result in most cases (Connelly & Ones, 2010). We therefore used 10 observers per condition (30 observers in total). For practical reasons, we chose undergraduate psychology students as observers, who were not acquainted with the

target persons. Observers had a mean age of 20.46 years (SD = 1.17) and 29 of them identified as female (1 male). Each observer was compensated either with course credit or 8€ per hour. We assigned each observer randomly to one of three groups: The first group watched the videos with sound (audio-visual condition), the second group only listened to the audio recordings (audio condition) and the third group watched a mute recording of the video (visual condition). The rating procedure took approximately 6 hours for each observer and was divided into two sessions. To avoid sequence effects, we balanced the order of presentation. Observers were encouraged to take breaks if they felt a lack of concentration. To further prevent increasing loss of concentration during the three-hour video-watching sessions, observers were allowed to skip parts of the video/audio file after the five-minute-mark for videos that lasted between five and 20 minutes (11 videos; observers were requested to view parts of targets' responses to each of the interviewer's questions, however). After each video/audio file, the observers were asked to estimate the target's motive dispositions. Rather than asking about specific motive-related cognitions and behaviors in concrete social contexts (as explicit motive questionnaires often do), we gathered more holistic judgments, which might be more natural in an unacquainted context. Precisely, observers made their judgments on a scale from 1 (*very low*) to 5 (*very high*) according to the following motive descriptions:

Affiliation Motive: *The affiliation motive is characterized by the need to be close to others. Persons with a strong affiliation motive get satisfaction through establishing and maintaining positive and intimate relationships with others. It is particularly important to them to be liked by others.*

Achievement Motive: *The achievement motive is characterized by the need for success. People with a strong achievement motive get satisfaction through the autonomous completion of challenging tasks. It is particularly important to them to do well in their tasks.*

Power Motive: *The power motive is characterized by the need for power. People with a strong power motive get satisfaction through having a physical, mental, or emotional influence on others. It is particularly important to them to have control over others.*

(For the original German version, see Supplementary Material S5).

As can be seen in Table 2, most inter-observer reliabilities were high in most cases (mean ICCs(3,k) = .75).

Table 2

Descriptive Statistics, ICCs and Intercorrelations of the First-Impression Motive Ratings for Each Rating Condition and Motive

Rating Condition	M(SD)	ICC	Audio-visual rating			Audio rating			Visual rating		
			Aff	Pow	Ach	Aff	Pow	Ach	Aff	Pow	Ach
Audio-visual rating											
Affiliation	2.94(.67)	.86									
Power	2.30(.58)	.79	-.30***								
Achievement	3.06(.56)	.79	.22*	.37***							
Audio rating											
Affiliation	2.82(.64)	.82	**.80***	-.12	.24**						
Power	2.06(.47)	.65	-.33***	**.68***	.15	-.28**					
Achievement	2.85(.54)	.75	.24**	.37***	**.76***	.26**	.21*				
Visual rating											
Affiliation	2.89(.74)	.84	**.69***	-.21	.15	**.53***	-.30**	.15			
Power	2.40(.61)	.73	-.31***	**.50***	.16	-.12	**.41***	.14	-.59***		
Achievement	3.11(.47)	.56	.04	.24**	**.33***	.12	.19*	**.31***	-.13	.33***	

Note. Reliabilities calculated via ICCs (3, k). Aff = Affiliation Motive; Pow = Power Motive; Ach = Achievement Motive. Within-motive correlations are printed in bold type.
$^{*}p < .05.$ $^{**}p < .01.$ $^{***}p < .001.$

Power Analysis

According to a power calculation (Cohen, 1988), the present sample size of *N* = 119 sufficed to detect effect sizes (Pearson correlations) of *r* = .25 or larger with a likelihood of at least 80% (alpha level = .05, two-sided tests). In many studies on person perception at low acquaintance (see, for example, Borkenau & Liebler, 1992; Schmid Mast et al., 2011), accuracy correlations exceeded this value.

Results

As in previous research, internal consistencies and retest correlations were high for motive self-reports and rather low for the PSE (see Table 1). Reliabilities were higher for the affective contingency-based measures, with the exception of the power measures (especially the PAC_EMG scale). The measures of explicit motives were positively correlated with each other within each motive domain. Thus, to increase the comprehensiveness and reliability of the explicit motive scores, we computed composite scores across the self-report scales for each motive. We will focus on these composite scores in the interpretation of the results. For the measures of implicit motives, there were positive correlations within the respective motive-domains for the two affective contingency-based measures, but correlations between the PSE and the affective contingency-based meas-

ures were inconsistent. As in previous research, there were no correlations that would be considered large according to standard conventions between measures of explicit and implicit motives (even though some of these correlations were statistically significant in the affiliation domain).

Descriptive statistics, reliabilities and intercorrelations for the motive observer ratings are shown in Table 2. Observer ratings of any given motive were typically consistent across modality conditions (mean intra-motive correlations: affiliation $r = .67$; power $r = .53$; achievement $r = .47$). Furthermore, negative correlations were present between the affiliation and power motive ratings within and between most modalities (mean $r = -.29$), and positive correlations were present between the power and achievement motive ratings (mean $r = .24$).

We first considered the findings from the audio-visual condition, which was the relevant condition with regard to our general research question of whether motives can be inferred by outside observers when visual and auditory information is available (as is typically the case in naturalistic settings). Correlations between target motive scores and observer judgments are presented in Table 3 (see Table S2 of the Supplementary Materials for an extended version of this table). Within each motive domain, the explicit motives composite scores correlated significantly with the respective observer ratings. Concerning the measures of implicit motives, the expected correlations with observer ratings were present for the PSE assessment of the achievement motive and for the PAC_{rat} and PAC_{EMG} assessments of the affiliation and achievement motives. Thus, observer ratings were linked to measures of explicit motives in all three motive domains, and to measures of implicit motives in two out of three domains (affiliation and achievement). For completeness, accuracy correlations for a single observer (which are necessarily smaller, because ratings made by single observers are less reliable than aggregated ratings made by several observers) can be found in Table S3 of the Supplementary Materials.

Table 3

Correlations Between Measures of Explicit and Implicit Motives with First-Impression Motive Ratings by Condition Averaged Across Both Waves

| Rating Condition | Measures of explicit motives | | | | | | | | | | | | Measures of implicit motives | | | | | | | | |
| | PRF | | | UMS | | | XMS | | | COMP | | | PSE | | | PAC_rat | | | PAC_EMG | | |
	r	95% CI	p	r	95% CI	p	r	95% CI	p	r	95% CI	p	r	95% CI	p	r	95% CI	p	r	95% CI	p
Audio-visual																					
Affiliation	.15	[-.03, .32]	.105	.14	[-.03, .32]	.117	.22	[.04, .38]	.099	**.20**	[.02, .37]	.030	.10	[-.08, .28]	.304	**.22**	[.04, .38]	.017	**.26**	[.08, .41]	.005
Power	**.42**	[.25, .55]	<.001	**.36**	[.19, .50]	<.001	.15	[-.30, .32]	.100	**.37**	[.20, .51]	<.001	-.02	[-.16, .30]	.862	.08	[-.10, .26]	.387	-.06	[-.24, .12]	.510
Achievement	**.30**	[.12, .46]	<.001	**.26**	[.08, .42]	.004	.15	[-.30, .32]	.111	**.30**	[.13, .46]	.111	**.20**	[.02, .36]	.033	**.24**	[.06, .40]	.009	**.20**	[.02, .37]	.031
Audio																					
Affiliation	.14	[-.04, .31]	.141	.12	[-.07, .24]	.236	.17	[-.01, .34]	.064	.17	[-.01, .34]	.071	.14	[-.04, .31]	.134	.11	[-.07, .28]	.234	**.20**	[.02, .36]	.031
Power	**.24**	[.06, .40]	.009	.16	[-.02, .33]	.077	.03	[-.16, .20]	.787	.17	[-.01, .34]	.071	-.12	[-.24, .07]	.187	.08	[-.10, .26]	.367	.04	[-.14, .22]	.691
Achievement	**.21**	[.03, .38]	.020	.16	[-.02, .33]	.089	.10	[-.08, .28]	.302	**.20**	[.02, .37]	.030	.07	[-.11, .25]	.465	.16	[-.02, .33]	.076	**.20**	[.02, .37]	.027
Visual																					
Affiliation	.01	[-.17, .19]	.876	.00	[-.18, .18]	.693	.15	[-.03, .32]	.107	.07	[-.11, .25]	.467	.09	[-.09, .27]	.336	.15	[-.03, .32]	.101	**.20**	[.02, .37]	.027
Power	**.23**	[.05, .39]	.011	.15	[-.03, .32]	.108	.07	[-.11, .25]	.463	.18	[-.01, .34]	.058	-.08	[-.26, .10]	.414	.00	[-.18, .18]	.961	.02	[-.16, .20]	.873
Achievement	.07	[-.11, .25]	.455	-.05	[-.23, .13]	.594	.06	[-.12, .24]	.547	.03	[-.16, .20]	.733	.01	[-.18, .18]	.900	-.01	[-.19, .17]	.896	-.12	[-.29, .07]	.213

Note. r = Pearson correlation; CI = Confidence Interval; PRF = Personality Research Form; XMS = Explicit Measure Scales; UMS = Unified Motive Scales; COMP = Explicit Motives Composite Score; PSE = Picture Story Exercise scores; PAC_rat = Positive Affective Contingencies, assessed via Affect Ratings; PAC_EMG = Positive Affective Contingencies, assessed via Electromyograph. The correlations were variable-centered correlations with aggregated observer-reports for all 119 targets. Significant correlations printed in bold type.

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We also investigated these results when adjusting for multiple testing. We applied the Benjamini-Hochberg (Benjamini & Hochberg, 1995) correction based on the 12 correlations that were relevant for testing our core research question (i.e., correlations between the explicit motives composite and measures of implicit motives with aggregated motive observer evaluations in each motive domain). Out of the eight correlations that were originally significant, six remained so (i.e., those for achievement-specific PSE and PAC_{EMG} scores measures turned non-significant).

We next examined how measures of explicit versus implicit motives were uniquely linked to observer ratings. For each of the originally significant zero-order correlations between the explicit motives composite scores and observer ratings, we tested whether it holds once the measures of implicit motives were controlled for. Conversely, for each measure of implicit motive, we tested whether its correlation with observer ratings held when the composite measure of explicit motives was controlled for. The partial correlations of the explicit motives scores controlling for the implicit measures were significant for the achievement ($r = .25$, $p = .006$) and power ($r = .36$, $p < .001$) motives, but it was non-significant for the affiliation motive ($r = .09$, $p = .336$). When controlling for explicit measures, the partial correlation between measures of implicit motives and observer ratings remained significant for PAC_{EMG} affiliation ($r = .21$, $p = .025$) and achievement motive domains ($r = .18$, $p = .050$). Partial correlations dropped to marginal significance for PAC_{rat} affiliation ($r = .17$, $p = .070$), PAC_{rat} achievement ($r = .17$, $p = .062$,) and PSE achievement ($r = .18$, $p = .054$) motives.

Next, we examined the effects in the modality-specific conditions. Descriptively, correlations were weaker in both modality-specific conditions than in the audio-visual condition, which would be expected given that fewer cues were available. But were the correlations for the explicit motives larger when only auditory information was provided than when only visual information was provided? And was the reverse true for the measures of implicit motives?

The overall pattern of results did not match with these hypotheses (see Table 3). For the explicit motive composite scores, correlations for the affiliation and achievement motives were descriptively more positive in the auditory condition than in the visual condition, but not significantly so (affiliation: $z = -1.16$, $p = .127$; achievement: $z = -1.57$, $p = .059$). For PAC_{rat} affiliation, the correlation was descriptively more positive in the visual condition than in the auditory condition, but again this difference was not significant ($z = .45$, $p = .327$). Thus, there was no evidence for the hypothesis that observer motive ratings overlap with implicit motives to a greater extent when based on visual instead of auditory cues, or that observer ratings overlap with explicit motives to a greater extent when based on auditory instead of visual cues.

Discussion

Previous research on person perception has indicated that even at first sight, strangers are able to rate important aspects of another person's personality with some degree of accuracy. The current research indicates that this is also the case for motive judgments. For all three motives, observer ratings were linked to at least one motive measure. Whereas most traditional person perception research predicted observer judgments exclusively with personality self- (or peer-)reports, the current findings indicate that in the case of motive judgments, when auditory as well as visual cues are available, observer judgments picked up on both explicit and implicit motive dispositions. When we corrected for multiple testing, most effects remained significant. The magnitude of the effect sizes was comparable to the ones reported for stranger ratings of the Big Five (Connelly & Ones, 2010). In several cases, measures of explicit and implicit motives predicted the observer ratings independently from each other, which is consistent with previous findings showing that explicit and implicit personality aspects can have incremental effects on person perception at low acquaintance (Hirschmüller et al., 2013).

Measures of explicit motives predicted observer ratings in all three motive domains, which means that unacquainted observers' judgments correspond to some extent with people's self-views with regard to their motives. These results match well with previous accuracy research based on motive self-reports (Wallace & Biesanz, 2021). For the measures of implicit motives, we found significant positive associations of the PAC scales with observer judgments in two out of the three domains (i.e., affiliation and achievement) and in one domain for the PSE (achievement). It thus appears that for these two motive domains implicit motives give rise to behavior that is visible to and inferable for others, which would indicate that other people are able to detect and interpret behavior that target persons themselves often might not even be aware of (Hofmann et al., 2009). When looking at the different measures of implicit motives separately, we found more consistent links to observer judgments for the PAC measures than for the PSE. Thus, observers seem to rely largely on the social behaviors correlating with motive-specific affective contingencies when they make their judgment about a target's motives.

However, in the power domain none of the three measures of implicit motives predicted observer judgments. For the affective contingency-based measures, the null correlations might be due to their poor psychometric performance. The reliabilities of the PAC scales were considerably lower in the power domain than in the other two domains (and for the PAC_{EMG} scale, the values were very low in absolute terms). For the PSE, the null effect is more puzzling, especially as previous research has reported a positive link between PSE assessments of the power motive and persuasiveness judgments by unacquainted observers in a similar setting (Schultheiss & Brunstein, 2002). Possibly, the relatively informal and friendly experimental situation was not well suited for activating the implicit power motive. In the terminology of the realistic accuracy model, relevance might have been low for power. Alternatively, it is possible that the experimental situa-

tion did arouse the power motive, but not so much its dominance and control aspects, but rather the need to impress others and gain prestige (Fodor et al., 2010), which was not well captured by our observer ratings.

With regard to the modality-specific effects, we found no evidence for our hypotheses that explicit motives can be inferred more accurately when only auditory (vs. visual) information is presented and that implicit motives can be inferred more accurately when only visual (vs. auditory) information is presented. A potential explanation for these null results is that the assumption that verbal behavior is controlled behavior whereas nonverbal is spontaneous might be too simplistic. Deliberative smiling, for example, is a non-verbal behavior that can be part of an intentional self-presentation tactic (DePaulo, 1992).

The findings from the audio-visual condition provide further evidence that affective contingency-based measures are largely independent of both self-reports and PSE scores and nevertheless predict important motive-specific outcomes. This pattern of results again indicates that the traditional view claiming that what lies beyond explicit self-views is a unitary implicit motive system that can be best captured via the PSE might be too simplistic. Instead, the results indicate that there might be several aspects of implicit motives that operate partly independently from each other (for similar findings in other content domains, see Banse et al., 2013, and Bosson et al., 2000). Accordingly, also measures working with questionnaire items (and which would therefore traditionally be classified as assessing "respondent" behavior), such as the PAC$_{rat}$ scales might potentially be used to tap into some of these aspects.

There are several limitations and suggestions for future research. Our hypotheses were not pre-registered and a fairly large number of correlations were investigated, which means that readers should focus not so much on individual correlations, but more on the overall pattern of results. Furthermore, our target person and observer samples consisted exclusively of university students. It is possible that due to their interests and training, psychology students might be particularly good at judging a stranger's personality and that effect sizes would be lower in other populations. Also, the fact that observers were also almost exclusively female might have inflated accuracy correlations (Klein & Hodges, 2001). Regarding the comparability of the observer ratings and the motive ratings, it should be noted that the observers rated the general motive dispositions of the target persons and thus did not make a distinction between implicit and explicit motives. Future research might explore whether observers can differentially infer targets' self-view with regard to their own motivations (explicit motives) versus their unconscious, affectively charged motivations (implicit motives). In doing so, future research should assess observer ratings with multiple item measures so that their reliabilities can be estimated (the same is true for the PAC$_{rat}$ scales, which assessed positive affect with only a single item in the current study). Another interesting task for future research would be to assess observers' intuitive judgments about targets' motives, for example

by having them make these judgments under conditions of distraction. According to the dual lens model, such judgments should be more strongly influenced by implicit motives (Hirschmüller et al., 2013).

Conclusion

People routinely try to find out about the motives underlying other persons' behavior (Dunbar, 2004). Knowing about others' motives can have great benefits, as it helps estimating their intentions and predicting their behavior. Even at minimal acquaintance, motive judgments seem to be linked to targets' explicit motives, and in some—albeit fewer cases—they might even be related to implicit motive aspects. The current results therefore suggest that people are not only routinely motivated to judge others' motives, but also to some extent able to do so.

Author Contributions: *Pauline Bassler*—Idea, conceptualization | Design planning | Resource provision (materials, participants, etc.) | Research implementation (software, hardware, etc.) | Data collection | Data management (storage, curation, processing, etc.) | Visualization (data presentation, figures, etc.) | Data analysis | Writing. *Michael Dufner*— Idea, conceptualization | Design planning | Resource provision (materials, participants, etc.) | Data collection | Data management (storage, curation, processing, etc.) | Validation, reproduction, checking | Writing | Feedback, revisions | Supervision, mentoring | Project coordination, administration | Funding to conduct the work. *Jaap Denissen*—Design planning | Resource provision (materials, participants, etc.) | Research implementation (software, hardware, etc.) | Data collection | Data management (storage, curation, processing, etc.) | Validation, reproduction, checking | Writing | Feedback, revisions | Supervision, mentoring | Funding to conduct the work.

Ethics Statement: The original large-scale study was approved by the institutional review board of Humboldt University in Berlin, Germany.

Data Availability: For this article, data is freely available (see Bassler et al., 2023).

Supplementary Materials

For this article, the following supplementary materials are available:

- All data needed to replicate the statistical analysis, codebook with information on all variables assessed in Wave 2 of our study, R-Script used to analyze the data, complete list of publications

that investigated parts of our data (S1), inter- and intramotive correlations between motive measures and motive ratings (S2), results of a single-observer accuracy analysis (S3), table showing correlations separately for each wave and combined waves (S4), original german instructions given to the observers (S5) (see Bassler et al., 2023)

- Open peer-review (see Personality Science, 2023)

Index of Supplementary Materials

Bassler, P., Dufner, M., & Denissen, J. (2023). *Supplementary materials to "Motive perception at first impressions: On the relevance of targets' explicit and implicit motive dispositions"* [Data, codebook, script, supplementary information and analyses]. PsychOpen GOLD. https://doi.org/10.23668/psycharchives.13507

Personality Science. (Ed.). (2023). *Supplementary materials to "Motive perception at first impressions: On the relevance of targets' explicit and implicit motive dispositions"* [Open peer-review]. PsychOpen GOLD. https://doi.org/10.23668/psycharchives.13506

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