ORIGINAL ARTICLE

Implicit Motives, Explicit Motives, and Motive-Related Life Events in Clinical Depression

Marie-Luise Neumann · Oliver C. Schultheiss

Abstract Past research suggests that implicit motive dispositions moderate individuals' affective responses to stimuli and life events and are related to well-being and symptoms of depression. We examined whether this association also extends to clinical depression by comparing patients diagnosed with a depressive disorder ($n = 30$) with a control group of surgery patients ($n = 31$) on implicit motives, assessed with a picture-story exercise, explicit motives, assessed via questionnaire, and recall and affect ratings of motive-related positive and negative life events. Depressed patients had lower levels of implicit needs for achievement and power than controls. Differences for implicit affiliation motivation as well as for the corresponding explicit motives were in the same direction, but considerably smaller. Compared to controls, depressed individuals recalled more positive and negative life events, but only rated the latter (particularly in the domains of power and achievement) more negatively. These findings suggest that implicit motive concepts and measures may provide a fruitful approach to understanding depression.

Keywords Implicit motives · Picture-story exercise · Need for achievement · Need for power · Need for affiliation · Explicit motives · Life events · Depression

M.-L. Neumann
Klinikum Chemnitz gGmbH, Chemnitz, Germany

O. C. Schultheiss (✉)
Department of Psychology, Friedrich-Alexander University, Nägelsbachstrasse 49b, 91052 Erlangen, Germany
e-mail: Oliver.Schultheiss@fau.de

Introduction

Implicit motives, nonconsciously represented dispositions to seek and cherish particular types of incentives (McClelland 1987; Schultheiss 2008), represent an important source of people's emotional well-being. Brunstein and colleagues found in a series of cross-sectional and longitudinal studies that implicit motives predict variations in emotional well-being, depending on the degree of progress people make towards motive-relevant personal goals (Brunstein et al. 1995, 1998; Schultheiss 2013; see Brunstein 2010, for a summary). For instance, individuals with power and achievement motives experienced increased well-being when they succeeded at realizing power and achievement goals, whereas they suffered from impaired well-being when they failed to realize such goals. In contrast, individuals with weak power and achievement motives did not respond with changes in emotional well-being to successes and setbacks en route to power and achievement goals. Schultheiss et al. (2008) as well as Pueschel et al. (2011) subsequently reported that such interaction effects between implicit motives and goal progress also extend to the domain of symptoms of depression as assessed with the Beck Depression Inventory (BDI; Beck et al. 1961). Importantly, Schultheiss et al. (2008) found across two studies that even if goal progress is not taken into account, stronger implicit motives are associated with fewer depressive symptoms.

While so far these findings suggest a link between implicit motives and depression, they were based on unselected student samples (Brunstein and colleagues' studies; Schultheiss et al. 2008) and psychotherapy patients with mood disorders, but also other diagnoses (Pueschel et al. 2011). Thus, it remains unclear whether the link between implicit motives and depressive symptoms also

extends to cases of clinical depression. In the present research, we therefore compared patients who had been diagnosed with and were being treated for depressive disorder with non-depressed surgery patients. In doing so, we examined whether depressives differed in their levels of implicit motives, self-attributed (explicit) motives, and recall and ratings of motive-related successes and setbacks preceding the hospitalization.

Traditionally, implicit motive research has focused on the need for achievement (abbreviated n Achievement; see Murray 1938), a concern with doing a task better or surpassing a standard of excellence, the need for power (n Power), a concern with having impact on other people, and the need for affiliation (n Affiliation), a concern for close, harmonious relationships with others (McClelland 1987; Schultheiss 2008). These motives are thought to operate as affect amplifiers; that is, a person high in a motive shows stronger hedonic responses to motive-specific incentives and disincentives than a person low in the motive (Atkinson 1957; Schultheiss 2008). In other words, motives imbue stimuli and situations with affective value, turning them into rewards or punishers. For instance, people high in n Power, but not those low in n Power, respond with increased feelings of happiness to having impact on others (Brunstein et al. 1998) and also show behavioral reinforcement in response to successful impact (Schultheiss and Rohde 2002; Schultheiss et al. 2005). But they also respond with decreased emotional well-being to situations of powerlessness (Brunstein et al. 1998), show negative facial affect to others' dominance (Fodor et al. 2006; Fodor and Wick 2009), and inhibit behavior associated with a defeat (Schultheiss and Rohde 2002; Schultheiss et al. 2005). Thus, the strength of a person's n Power turns impact experiences into reward and the experience of one's own powerlessness or others' dominance into punishment. Analogous results have been obtained for n Achievement and n Affiliation (for a review, see Schultheiss and Köllner 2014).

While our description of motives as affect amplifiers would suggest that motives cut both ways—turning the attainment of incentives into bliss and run-ins with disincentives into hurt—, theory and research suggest that their overall emotional effects may be asymmetrical, with a bias towards enhanced well-being. In their review of the effects of motives on learning and memory, Schultheiss and Köllner (2014) have argued that because motives help select and retain behaviors that maximize incentive contact and minimize disincentive contact, they promote intuitive behavioral strategies that are effective for incentive pursuit and attainment and the affective pleasure that accompanies it (for the neurobiological underpinnings of this effect, see Schultheiss and Schiepe-Tiska 2013).

This helps explain why higher motive levels are associated with better adjustment and well-being in several studies. For instance, McAdams and Vaillant (1982) found that individuals with higher levels of n Achievement and n Intimacy (a motive closely associated with n Affiliation), but not those with higher n Power, at age 30 had higher adjustment scores (including a lesser likelihood of psychiatric illness) 17 years later. For the association between n Initimacy and adjustment, they reported $r = 0.39$. No measure of association was given for n Achievement. Orlofsky (1978) observed that individuals' sense of achieved identity was positively associated with n Achievement scores ($d = 0.50$). A study of marijuana users with and without mood disorders by Musty and Kaback (1995) found that individuals with severe depressive symptoms had lower n Achievement scores than individuals without such symptoms ($d = 1.33$). However, they did not differ from each other in terms of their n Power and n Affiliation scores. Bársony et al. (2013) found in a study of opiate users and non-users that n Achievement, but not n Affiliation or n Power, was negatively associated ($r = -0.30$) with a combined index of depression and anxiety symptoms in the full sample. Finally, as mentioned above, Schultheiss et al's (2008) reported a negative association of implicit motive scores, aggregated across the domains of achievement, power and affiliation, and depressive symptoms. When we reanalyzed their data by regressing log-transformed BDI scores on disaggregated motive scores, depression scores were uniquely predicted by n Achievement in Study 1 ($\beta = -0.23$, $p < .05$) and by n Power in Study 2 ($\beta = -0.28$, $p < .01$). n Affiliation was not associated with BDI scores in either study. In summary, the most consistent link between strong motivational need dispositions and better adjustment and lesser psychopathology emerges for n Achievement, while this is true of n Affiliation and n Power only in some studies, but not in others.

If these observations can also be extended to clinical levels of depression, findings for motives and well-being converge with current theorizing and research on depression. Some researchers see depression as being characterized by a general deficit in assigning hedonic value to rewards (e.g., Pizzagalli et al. 2008). This view fits the observation that lower overall levels of motives—and thus lower capacities for experiencing incentive attainment as pleasurable—are associated with more symptoms of depression (Schultheiss et al. 2008). Others have emphasized the role of specific types of stressors related to defeat, failure, and social isolation in the genesis of depression (Blatt and Zuroff 1992; Clark et al. 1995; Gilbert 2006), stressors that could be viewed as specific disincentives for n Power, n Achievement, and n Affiliation, respectively (see Brunstein and Maier 2005; Wirth and Schultheiss 2006; Wirth et al. 2006). Finally, ever since the formulation of learned-helplessness accounts of depression

(Abramson et al. 1978), researchers have noted that a failure to cope with punishment and to adjust behavior after negative feedback represents a vulnerability for depression (reviewed in Eshel and Roiser 2010). Because n Achievement has been characterized as a propensity to view adversity as an incentive for increased effort and behavioral adjustment (Kuhl 2001; Schultheiss and Brunstein 2005), individuals high in this motive should be less likely, and those low in this motive more likely, to develop depression after adverse life events.

In the present research, our main goal was therefore to explore implicit motive differences between hospital patients being treated for clinical depression and a control group of surgery patients without depressive symptoms. We assessed participants' implicit motives using a standard picture-story method that required participants to write imaginative stories about pictures showing people in a variety of situations. Stories were then coded for motive imagery using an empirically derived, integrated coding system (Winter 1991, 1994). Because implicit motive scores derived in this manner frequently fail to correlate substantially with people's self-attributed, explicit motivational needs (Köllner and Schultheiss 2014; Spangler 1992), we also included a measure of the latter in our study[1]. Finally, based on the previously described observation that implicit motives interact with motive-specific successful and unsuccessful goal-pursuit episodes in shaping emotional well-being and symptoms of depression (see Brunstein 2010) and the notion that specific stressors predict the onset of depression in individuals with particular vulnerabilities (e.g., Bartelstone and Trull 1995), we also assessed participants' recall of positive and negative life events related to power, achievement, and affiliation immediately preceding the hospital admission.

Based on the findings reviewed above, we hypothesized depressed patients to have significantly lower n Achievement scores than controls. Given the less consistent findings for the other two motives, we only tentatively expected them to have lower n Power and n Affiliation

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[1] We do not include in our review of previous research on implicit motives and depressive symptoms studies that have used so-called grid measures of motivation, that is, measures that require the respondent to endorse self-report items in response to specific picture cues and that are similar to the explicit motive measure used in the present study (e.g., Fuhr et al. 2014). Although some have claimed that such self-report measures assess implicit motives (e.g., Kehr 2004), there is actually no evidence for convergent validity with well-validated picture-story measures of implicit motives (e.g., Brunstein and Heckhausen 2008; Schüler et al. 2013; Schultheiss et al. 2009; see also our results section), but substantial evidence for convergence with other explicit motive measures (e.g., Kehr 2004; Langens et al. 2005; Schultheiss et al. 2009). Including studies based on grid measures in our review would therefore provide a misleading picture of what is known about the association between *implicit* motives and depressive symptoms.

scores, too. Because only implicit motives, but not explicit motives, are assumed to be closely tied to affective processing of (dis)incentives (McClelland 1987), we did not expect differences between depressed and control participants in explicit motive measures. Finally, we expected depressed patients to recall significantly more negative life events preceding the hospital stay and/or rate them as more severe than controls and we expected the recall and/or rating of life events to be associated with implicit motives, but not with explicit motives.

Methods

Participants

Sixty-one patients (44 women and 17 men) participated in this study in 2012. Sample size was determined in part by access to eligible patients and in part by a power analysis based on the expectation of a medium effect size (i.e., $r = 0.30$; see Cohen 1992) and a power of 0.80 for detecting such an effect in the sample, which would have required 85 participants. Hence, the power of our sample size to detect such a medium effect was 0.65. Thirty participants belonged to the depressive group and 31 belonged to the control group. The depressive patients were recruited from a hospital in Chemnitz (Germany) and had been diagnosed with major depression (either single episode or recurrent) based on ICD-10 criteria by a psychiatrist and were currently in treatment for depression. Control group participants were recruited from a hospital in Stollberg (Germany) and consisted of patients recovering from surgery (hip: n = 8; knee: n = 7; accident-related injuries: n = 13; other: n = 3; none had a head injury). Table 1 provides descriptive statistics on gender, age, and marital status, broken down by group. While the two groups did not differ on gender, depressed participants were somewhat younger than control-group participants and also differed from them in marital status. Depressed patients were more likely to be divorced, whereas control-group participants were more likely to be widowed.

Design and Procedure

The study used a cross-sectional, quasi-experimental design by comparing a group of participants hospitalized for depression with a group of participants hospitalized for surgery. These groups were compared on implicit motive measures of power, achievement, and affiliation as well as on measures of explicit motivational needs and critical life events in these same motivational domains. Participants first wrote stories on the PSE, which were later coded for implicit motive imagery. Then they completed an explicit

Table 1 Sample characteristics

	Depressed group	Control group	t	χ^2	df	p
N	30	31		0.02	1	.89
Gender	22 female, 8 male	22 female, 9 male		0.04	1	.84
Age	$M = 45.33$, $SD = 12.67$	$M = 59.74$, $SD = 16.09$	-3.88		59	<.001
Marital status				18.56	3	<.001
Single	8	7				
Married	11	13				
Divorced	11	1				
Widowed	0	10				
BDI-II	$M = 26.50$, $SD = 8.86$	$M = 3.16$, $SD = 1.76$	14.34		59	<.001

motive measure, a questionnaire for critical life events, a depression measure, and provided biographical information.

Implicit Motives

Implicit motives were assessed with the standard Picture Story Exercise (PSE) by Pang and Schultheiss (2005), which requires research participants to write imaginative stories about six pictures: nightclub scene, couple by river, women in laboratory, boxer, trapeze artists and ship captain. The pictures were presented in the same order for each patient, using standard instructions and procedures described in Schultheiss and Pang (2007). Participants had 5 min for each story. The stories later were coded for motivational imagery by a trained scorer using Winter's (1994) *Manual for scoring motive imagery in running text*.

According to this manual, affiliation-intimacy imagery is scored whenever a story character shows a concern with establishing, maintaining or restoring friendly relations, as expressed by positive feelings toward other persons, sadness about separation from others, affiliative activities, or friendly, helping acts. Power imagery is scored whenever a story character shows a concern with having impact on other persons through strong, forceful actions, through controlling, influencing, impressing others, through unsolicited help, or by eliciting strong emotions in other people. Achievement imagery is scored whenever a character shows a concern with a standard of excellence, as indicated by positive evaluations of goals and performances, winning or competing with others, disappointment about failure, or unique accomplishments.

The coder had previously exceeded 85 % inter-rater agreement on calibration materials that were prescored by an expert and that are contained in Winter's (1994) manual. The coder was blind with regard to participants' group status and scores on other measures. Twenty percent of all stories were coded by a second trained coder to determine coding reliability. Inter-rater reliability (Pearson's r) was good, with 0.94 for n Achievement, 0.93 for n Power, and 0.86 for n Affiliation. Summed across all six picture stories,

participants on average wrote 275 words ($SD = 136$), containing 4.23 ($SD = 1.66$) affiliation-intimacy, 2.67 ($SD = 2.01$) power, and 3.98 ($SD = 2.19$) achievement images summed across all stories. Depressed patients ($M = 261$, $SD = 159$) did not significantly differ from surgery patients ($M = 288$, $SD = 108$) in overall word count, $t(59) = -0.79$, $p = .44$, Because longer stories were significantly associated with more imagery for all three motives ($rs = 0.43$–0.47, $ps < .0006$), we regressed word count from each of the three motive imagery scores, converted the residuals to z scores, and used these in all further analyses (see Schultheiss and Pang 2007).

Explicit Motives

To assess participants' explicit motives, we administered the PSE–Q (Schultheiss et al. 2009), a measure that uses the same six picture cues as the PSE, but requires participants to endorse a set of self-descriptive items for each picture. Each set consists of 15 items, corresponding to the 15 coding categories of Winter's (1994) coding system (we used the revised set of items described in Schultheiss et al. 2011). Items were presented in random order below each PSE picture and could be endorsed on a True/False (1/0) scale. Sample items are "In this situation, I would try to persuade or convince the other person(s)" (power), "In this situation, I would try to achieve something extraordinary" (achievement), and "In this situation, I would try to share companionate activities with the other person" (affiliation). Scores for each of the 15 items were summed across the 6 pictures. Coefficient alphas for these aggregated items were 0.79 for the power scale (6 items), 0.92 for the achievement scale (5 items), and 0.80 for the affiliation scale (4 items). After summing item scores to create overall scale scores for each motive domain, mean (SD) scores were 15.11 (7.29) for power, 17.25 (7.71) for achievement, and 11.92 (5.15) for affiliation. The PSE–Q thus represents an explicit motive measure whose assessment method is carefully matched to the implicit motive measure described above and that

therefore fulfills the requirement of commensurability with our implicit motive measure (see Köllner and Schultheiss 2014; Schultheiss et al. 2009). PSE–Q scales for achievement, power, and affiliation have been shown to converge with other explicit measures of these motivational domains (e.g., Bipp and Dam 2014; Schönbrodt and Gerstenberg 2012; Schultheiss et al. 2009), but not with implicit motive measures (Schultheiss et al. 2009, 2011).

Life Events

We administered the Motivational Life Events Questionnaire (MLEQ; Patalakh and Schultheiss 2010), an instrument for the assessment of life events that are relevant to the three motives affiliation, power and achievement. The MLEQ features 2 (positive vs. negative) × 3 (affiliation, power, achievement) items. Items (negative, positive) are "(Potential) loss of an important person in my life" and "Establishing or deepening of a relationship with another person" for the affiliation domain, "A significant achievement failure" and "A significant achievement success" for the achievement domain, and "Experiencing my powerlessness" and "Experiencing my own strong impact on other people" for the power domain. Participants were instructed to focus on life events that had happened immediately before they entered the hospital and to provide for each of the six event categories a brief description of an event, if they had experienced one. They were then asked to evaluate the impact of each event on them, using a seven-point scale with gradations labeled "extremely negative" (−3), "moderately negative" (−2), "slightly negative" (−1), "no effect" (0), "slightly positive" (1), "moderately positive" (2), and "extremely positive" (3). Omitted event descriptions were assigned a scale value of 0. Thus, the MLEQ allowed us to separate the recalled *occurrence* of positive and negative life events from *ratings* of the extent and direction of their affective impact on participants.

Depressive Symptoms

Participants completed the 21-item form of the BDI-II (Beck et al. 1996), a well-validated and widely used measure of depressive symptoms that reflects the diagnostic criteria of the diagnostic and statistical manual of mental disorders (American Psychiatric Association 2000) for major depressive disorder. In the present study, the coefficient alpha of the BDI-II was 0.95. As Table 1 shows, participants in the depressed group had considerably higher BDI scores (range 7–43) than control group participants (range 0–6), as would be expected by their diagnosis.

Results

First, we explored the difference between depressed and control-group participants regarding their implicit motives. As shown in Table 2, the depressed group had lower scores on all three implicit motive scales than the control group. However, only the group differences for n Achievement and n Power were significant. The difference for n Affiliation did not pass the significance threshold.

Next, we explored the difference between the groups regarding their explicit motives. The depressed group endorsed significantly fewer power, achievement, and affiliation motive items than the control group. However, the difference was only significant for the power scale and approached significance for the affiliation scale, whereas it did not become significant for the achievement scale.

In terms of effect size, the difference between depressed and control patients in implicit n Power and particularly n Achievement far exceeded the 0.80 threshold for large effects (Cohen 1992). In contrast, effect sizes for implicit n Affiliation and all three explicit motive scales were in the small (0.20) to medium (0.50) range.

With regard to the recalled occurrence of critical life events, the depression group reported significantly more positive and also more negative events than the control group did. These differences, which had a large effect size, reflected a higher incidence of domain-specific positive and negative events for all three motives in the depressed group, relative to the control group.

With regard to the ratings of critical life events, depressed participants significantly differed from control-group participants only in the case of negative events, which they rated as more negative. Detailed analyses revealed that depressed patients gave more negative ratings for negative events in all three motivational domains, with consistently large effect sizes.

Additional Analyses

In addition, we ran exploratory analyses investigating the relationships between PSE, PSE–Q, and MLEQ measures for the overall sample. Because participant group was associated with implicit (PSE) and explicit (PSE–Q) motive measures and may thus have contributed to the covariance between the two types of measures, we examined associations between implicit and explicit motive scales with group status held constant, and obtained partial correlations of −0.25 ($p < .05$), 0.07 (*ns*), and 0.24 (*ns*) for power, achievement, and affiliation, respectively.

After controlling for group status, explicit motives were neither significantly associated with memory for the occurrence of negative events in the domains of power, achievement, and affiliation (partial *r*s = 0.14, 0.09,

Table 2 Differences between depressed and control participants in implicit and explicit motive measures and motive-related critical life events

	Depressed group	Control group	t	d	χ^2	df	p
Implicit motives							
Power	$M = -0.49, SD = 0.75$	$M = 0.47, SD = 1.00$	−4.26	−1.08		59	<.001
Achievement	$M = -0.63, SD = 0.60$	$M = 0.61, SD = 0.93$	−6.21	−1.58		51.34	<.001
Affiliation	$M = -0.14, SD = 1.02$	$M = 0.14, SD = 0.97$	−1.09	−0.28		59	.28
Explicit motives							
Power	$M = 13.13, SD = 5.18$	$M = 17.03, SD = 8.51$	−2.18	−0.55		49.82	.03
Achievement	$M = 16.20, SD = 7.24$	$M = 18.26, SD = 8.13$	−1.04	−0.27		59	.30
Affiliation	$M = 10.73, SD = 4.31$	$M = 13.06, SD = 5.69$	−1.80	−0.46		59	.08
Critical life events							
Recalled occurrence							
Positive events ($\sum$)	$M = 0.77, SD = 1.01$	$M = 0.13, SD = 0.56$	3.04	0.79		45.18	.004
Negative events ($\sum$)	$M = 1.43, SD = 1.07$	$M = 0.13, SD = 0.43$	6.20	1.60		37.74	<.001
Power pos.	5	1		0.99	3.11	1	.08
Power neg.	19	0		1.87	28.52	1	<.001
Achievement pos.	6	1		1.11	4.22	1	.04
Achievement neg.	10	2		1.09	6.97	1	.008
Affiliation pos.	12	2		1.25	9.70	1	.002
Affiliation neg.	14	2		1.40	15.74	1	<.001
Critical life events							
Ratings							
Avg. positive events	$M = 0.33, SD = 0.67$	$M = 0.11, SD = 0.49$	1.50	0.38		59	.14
Avg. negative events	$M = -1.00, SD = 0.95$	$M = -0.04, SD = 0.14$	−5.45	−1.43		30.26	<.001
Power pos.	$M = 0.10, SD = 0.66$	$M = 0.06, SD = 0.36$	0.26	0.08		44.41	.80
Power neg.	$M = -1.53, SD = 1.31$	$M = 0.00, SD = 0.00$	−6.43[a]	−1.67		29	<.001
Achievement pos.	$M = 0.30, SD = 0.70$	$M = 0.10, SD = 0.54$	1.27	0.32		59	.21
Achievement neg.	$M = -0.70, SD = 1.09$	$M = -0.06, SD = 0.25$	−3.12	−0.82		31.95	.004
Affiliation pos.	$M = 0.60, SD = 1.35$	$M = 0.16, SD = 0.64$	1.61	0.42		40.95	.12
Affiliation neg.	$M = -0.77, SD = 1.63$	$M = -0.06, SD = 0.25$	−2.33	−0.61		30.31	.03

[a] One-sample t test against 0 for the depressed group. Cohen's d was calculated directly from group means and standard deviations for quantitative variables and 2×2 cell frequencies (logit) for categorical variables with non-empty cells and Chi square values when one cell was empty

−0.09, respectively; all *ns*) nor with ratings of these events (partial rs = −0.14, −0.16, 0.02, respectively; all *ns*). When we repeated the same analyses for implicit motive measures, partial correlations for recalled events in the domains of power, achievement, and affiliation were −0.04 (*ns*), −0.10 (*ns*), and 0.32 ($p < .05$), respectively; for affect ratings, they were 0.01 (*ns*), 0.09 (*ns*), and −0.33 ($p < .05$). Thus, while implicit and explicit motives were not systematically associated with recall and ratings of corresponding negative life events above and beyond group status, implicit n Affiliation was the exception from this rule, with higher scores on this measure being associated with a higher likelihood of recalling an affiliation stressor and more negative ratings of this type of event.

Women and men did not significantly differ with regard to their BDI, their implicit and explicit motive scores, and

their recall and ratings of positive and negative life events in the three motivational domains.

Discussion

Our main goal in this study was to examine group differences in implicit needs for achievement, power, and affiliation between clinically depressed and control participants. In addition, we also examined group differences in the motivational needs that participants attributed to themselves (explicit needs for achievement, power, and affiliation) and in participants' memory for the occurrence and affective impact of positive and negative life events in the domains of achievement, power, and affiliation.

Based on earlier findings of a negative relationship between implicit n Achievement and indicators of psychological ill-being and depressive symptoms, we had hypothesized n Achievement to be lower in depressed than in control participants. This is indeed what we found, and with a large effect size. Although we cannot draw causal inferences for this observation or any other findings from our cross-sectional study, it is consistent with the recent report by Schultheiss et al. (2014) that individuals low in n Achievement show an exaggerated hormonal stress axis response to challenging tasks such as a competition or public speaking. These authors argued that low-achievement individuals are vulnerable to viewing adversity as threatening and insurmountable, thereby precipitating the release of high levels of cortisol, which has also been implicated in depressive illness (Ehlert et al. 2001). High-achievement individuals, on the other hand, view difficulty as a cue to the pleasure of successful mastery of a challenge. As a consequence, they experience little negative affect and step up their efforts to resolve the situation (for related findings, see also Reeve et al. 1987, Experiment 2). This would suggest that individuals high in n Achievement are inoculated against the psychologically and physiologically corrosive effects of adverse life events and thus less prone to develop a depressive disorder, whereas individuals low in n Achievement are particularly vulnerable to such events.

However, given the correlational nature of our data and the moderately high retest stability of implicit motive scores (Schultheiss and Pang 2007), we cannot rule out that between-group n Achievement differences are a consequence, rather than a cause, of depressive disorder. Because measures of implicit motives capture not only variance due to stable dispositions, but are also sensitive to situational arousal effects (see McClelland 1987, chapter 6), one could speculate that life events associated with powerlessness and failure precipitated both the onset of depression and a decline in the implicit needs for power and achievement. Neither can we rule out that other variables cause both low n Achievement and clinical depression. However, neuroticism, which frequently represents such a "third variable" in research on depression and other mental health issues (see, for instance, Sutton et al. 2011), is an unlikely candidate in this case, because research consistently shows implicit motives to correlate close to zero with this trait (see Pang and Schultheiss 2005; Schultheiss and Brunstein 2001).

Depressed participants also had markedly lower n Power scores than control participants, but did not reliably differ from them in terms of n Affiliation. This suggests that depressed individuals are unable to draw pleasure from having impact on other individuals or, in light of their avoidance of power-related themes in response to PSE

picture cues suggestive of power, perhaps even fear and avoid such impact experiences (cf. Schultheiss 2008; see also Gilbert 2006). The latter interpretation fits the observation that depression is associated with low assertiveness and social withdrawal (e.g., Ball et al. 1994). It would also fit the high occurrence of remembered negative, power-related life events in depressed participants; that is, memories that reflect one's own powerlessness. However, in light of the inconsistent results regarding depressive symptomatology and n Power in previous studies (e.g., Musty and Kaback 1995), these findings need to be replicated first before further conclusions are drawn.

The observation that depressed individuals are capable at nearly the same level as control participants of deriving pleasure from close, harmonious relationships with others (n Affiliation) is consistent with previous reports (see introduction). This would suggest that for the depressed, the therapeutic provision of affiliation incentives may represent a lever for alleviating depressive symptoms that may help overcome depressives' impaired social interaction patterns (see Joiner 2002). In summary, our findings suggest that at the level of implicit motives depression may be less associated with impaired hedonic responses to affiliative contacts and more with a loss of assertive engagement with the social world (n Power) as well as an inability to deal with challenges in a hopeful and constructive manner (n Achievement).

In contrast to implicit motive measures, for which we had obtained large group differences for two of the three scales, group differences were much smaller, although in a similar direction, for explicit motive measures. Depressed individuals attributed less power motivation and slightly less affiliation motivation to themselves than control participants, but did not differ from them in the extent of self-attributed achievement motivation. Thus, their reduced sense of explicit power motivation paralleled their reduced n Power, although in a much less pronounced manner.

Implicit and explicit motive measures had no reliable positive association and were even negatively correlated in the case of power motivation. More generally, our findings regarding the differences between implicit and explicit motive measures suggest that implicit motive measures may be more valid and sensitive than explicit measures both with regard to differences in levels of depressive symptoms and to some extent also with regard to the recall of events in motive-relevant life domains (n Affiliation was associated with the recall of more affiliation stressors and with more negative rating of such events). This is consistent with theorizing about the fundamental differences between implicit motivational needs, which are thought to be closely associated with affective and physiological processes, such as stress axis activation, and to predict memory for emotionally charged life events, and explicit

motivational needs, which are based on what people believe about themselves, are anchored in their self-concept, and predict self-descriptive autobiographical memories (Brunstein 2008; McClelland et al. 1989; Schultheiss 2008; Weinberger and McClelland 1990; Woike 2008). Similar to our present findings, measures of implicit and explicit levels of motivation usually fail to correlate with each other and predict different outcomes in response to different types of stimuli and situations (Köllner and Schultheiss 2014; McClelland et al. 1989; Spangler 1992).

Finally, we also obtained evidence that in comparison to control patients, depressed patients recall many more negative events immediately preceding the hospital stay, but also more positive events. This overall pattern of findings was due in equal parts to positive and negative events in the life domains of power, achievement, and affiliation. However, when we examined the affective impact that these events had on research participants, depressed individuals were affected more negatively only by the negative events, and here particularly by events related to powerlessness and to a lesser extent also by failure and rejection/loss events. But no reliable group differences emerged for the affective impact of positive events in general or events related to power, achievement, or affiliative successes specifically. Our findings are in partial agreement with earlier research documenting the presence of more negative events in the life of depressives immediately before depression onset as compared non non-depressives (Kessler 1997; Monroe and Hadjiyannakis 2002). Depressives' comparatively good memory for more positive events is surprising at first blush and may be due to the specific manner in which the MLEQ prompts for events or other possible confounding factors, such as undetected cognitive impairments in control-group participants. But it is in keeping with classic check-list approaches that also include positive events as potential contributors to psychopathology (Holmes and Rahe 1967). However, depressives did not differ in their ratings of positive events from controls.

More generally, the present findings document the validity of the MLEQ as a measure that is sensitive to differences in the recall and experience of life events in depressives and controls. Its conceptualization as a measure of life events that can be mapped onto the motivationally relevant and well-researched domains of power, achievement, and affiliation as well as its symmetrical format for positive and negative life events may make it a useful instrument for further research into the association between depression and motivationally relevant life episodes. More research is needed, however, to determine to what extent the criticisms that have been leveled against life event inventories, such as biased recall and retrospective ratings of events (e.g., Dohrenwend 2006), also apply to the MLEQ.

Limitations

We have already mentioned that due to the correlational nature of our data, at present no firm conclusions about causal effects can be drawn. Whether existing differences in implicit motives represent vulnerabilities that, in conjunction with critical life events, contribute to the onset of mood disorders or whether these differences are the result of mood disorders and life events could be explored in large-scale prospective studies. Alternatively, these issues could also be addressed in smaller longitudinal studies that examine changes in subclinical symptoms of depression along with changes in implicit motives (e.g., is an increase in depressive symptoms associated with a subsequent decrease in n Achievement and n Power or vice versa?) or in patient studies that focus on variations in the course of depressive disorders as a function of variations in motive dispositions (e.g., do depressed individuals with higher n Achievement recover more quickly than those with lower n Achievement? Is the quality of the therapeutic relationship particularly relevant for individuals high in n Affiliation?).

Another limitation of this study is that no structured clinical interview has been used for diagnosing depressed and control patients and hence the lack of information about other (comorbid) psychological disorders in depressed and control participants. Such information may help resolve whether the differences we observed in the present study are specific for and mainly due to depression or also extend to anxiety disorders (frequently comorbid with depression) or other disorders (but see Schultheiss et al. 2008). Neither did we obtain information about other neuropsychological impairments, socioeconomic status, education, drug use, or intelligence, that is, factors that could be associated with depression and the recall of life events.

Although we compared depressives to a control group that was also hospitalized at the time of testing, this group differed from the depressed patients in terms of age and marital status. These factors, too, can have contributed to the observed between-group differences in dependent measures above and beyond differences in mood disorder diagnosis.

Finally, because our sample did not quite reach the size that would have been necessary to reliably detect the medium-size effects we expected for the association between depression and implicit motives, the effect sizes we report here may be biased and more subtle effects of, for instance, gender differences may have gone undetected.

Replications with better statistical power are therefore called for.

Conclusion

Our study is the first to examine implicit motive levels in individuals currently diagnosed with depression relative to a control group. Consistent with earlier reports of a negative association between implicit motives (particularly n Achievement) and depressive symptoms in other populations, we found that clinically depressed patients had substantially lower levels of the implicit motives n Achievement and n Power, whereas they differed from the controls much less on n Affiliation and on explicit, self-report measures of motivational needs. Our findings thus point to a critical role of implicit motives in depressive disorders, a role that needs to be explored in further studies that replicate and extend the findings we have reported here.

Conflict of Interest Marie-Luise Neumann and Oliver C. Schultheiss declare that they have no conflict of interest.

Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

Animal Rights No animal studies were carried out by the authors for this article.

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