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The role of implicit motivation in hot and cold goal pursuit: Effects on goal progress, goal rumination, and emotional well-being

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Abstract

Two cross-sectional studies examined the role of implicit motivational needs in the association between personal goal pursuits and depressive symptoms and affect. Replicating and extending on findings reported by Brunstein et al. [Brunstein, J. C., Schultheiss, O. C., & Grässmann, R. (1998). Personal goals and emotional well-being: The moderating role of motive dispositions. *Journal of Personality and Social Psychology, 75*(2), 494–508], both studies provided evidence that goal progress significantly accounted for variations in depressive symptoms and happiness only in individuals with high levels of implicit motivation, but not in individuals low in implicit motivation. Moreover, in the absence of a strong sense of goal commitment, high levels of implicit motivation were associated with high goal progress in both studies and low levels of goal rumination in Study 2. These findings are interpreted within a dual-systems framework of motivation that distinguishes an implicit, intuitive, and hedonically driven from an explicit, effortful-analytical, and non-hedonic mode of goal pursuit.

Keywords: Implicit motives; Depression; Goal commitment; Goal progress; Rumination; Emotional well-being; Picture story exercise; Personal goals; Intuition; Happiness

1. Introduction

Research on personal goals, defined as the personally meaningful pursuits that people construe for themselves and try to attain in their everyday lives (Brunstein, 1993), indicates that persistent difficulties in goal striving are associated with impaired mood and depressive symptoms. Individuals who cling to goals that are no longer attainable in their current life situation are more likely to suffer from low mood and depressive symptoms than individuals who pursue attainable goals (e.g., Feather & Barber, 1983; Keller & Nesse, 2005; Lecci, Karoly, Briggs, & Kuhn, 1994; Nurmi & Salmela-Aro, 2002). Moreover, longitudinal studies reveal that

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difficulties and setbacks on the way towards realizing personal goals lead to subsequent decreases in emotional well-being, indicating that low goal progress is a precursor, not a consequence, of impaired mood (e.g., Brunstein, 1993, 1999; Brunstein, Dangelmayer, & Schultheiss, 1996).

Recent research suggests, however, that high rates of progress do not per se translate into enhanced, and low rates of progress not always into impaired, emotional well-being. Rather, success and failure in the pursuit of personal goals affects mood only to the extent that goals are relevant for the satisfaction of implicit motives. Implicit motives are non-conscious dispositions to experience specific types of incentives as rewarding. Research conducted over the past 50 years has focused on the needs for power, achievement, and affiliation–intimacy as three of the most fundamental human motives (McClelland, 1987). Brunstein, Schultheiss, and Grässmann (1998) assessed these motives with thematic content coding of picture stories in two longitudinal studies with German students. They also assessed students' personal goals with a goal inventory, and measured their emotional well-being with a mood adjective scale. Brunstein and colleagues found that for individuals who pursued goals that were supported by strong implicit motives, high rates of goal progress predicted elevated well-being as assessed by self-report mood adjective scales, whereas low rates of goal progress predicted decreased well-being.

These results can best be understood if one conceives of motive-supported goals as opportunity structures that allow people to experience emotional highs through consummation of affectively charged incentives. Thus, for a power-motivated person the goal of becoming president of a student organization provides many opportunities to have impact on others (the incentive of the power motive) en route to the goal by, for instance, persuading others and enlisting their support, being visible through making speeches and giving interviews, and so forth. Being successful at taking advantage of such opportunities not only promotes the realization of the long-term goal, but also provides the person with frequent experiences of having impact on others, experiences that due to the person's strong power motive are pleasurable and contribute to overall emotional well-being. Successful realization of goals ripe with incentives for a person's implicit motivational needs therefore provides an opportunity for *motivational gratification*.

However, a motive-supported goal can also set up a person for *motivational frustration*, if his or her efforts to promote the goal and take advantage of opportunities to do so are frequently thwarted. Consider the power-motivated person again who runs for office, but finds herself outmaneuvered by competitors, unable to make an impression on an audience, or faced with opposition when trying to convince others of her views. All of these experiences are adverse to the person's need for power and will elicit feelings of tension, frustration, and dejection. Thus, the pursuit of motive-supported goals provides opportunities to satisfy one's implicit needs, but can also set one up for impaired mood if taking advantage of such opportunities becomes difficult or impossible. Striving for motive-supported goals can therefore be considered an affectively "hot" mode of goal pursuit, because successes and failures en route to the goal impinge on the person's implicit motivational needs.

While both motivational gratification and motivational frustration represent outcomes in the pursuit of affectively hot personal goals, Brunstein et al. (1998) also found evidence for an affectively "cold" mode of goal pursuit, in which high or low progress in the pursuit of goals in the absence of strong implicit motives (e.g., a person low in achievement motivation successfully realizing an achievement goal) had *no* detectable effect on changes in individuals' emotional well-being. Success at realizing goals that were not supported by implicit motives did not lead to emotional highs, but neither did failure to achieve such goals lead to emotional lows. This finding could not be explained by variations in goal commitment or goal progress, because subjects were equally committed to motive-supported and non-supported goals and reported similar rates of progress towards both types of goals.

To summarize, past research shows that the pursuit of hot goals, that is, personal goals that are backed up by strong implicit motives, allows individuals to experience intense motivational gratification through successful goal enactment, but also represents a vulnerability for motivational frustration if they experience setbacks in their attempts to realize motive-supported goals. On the other hand, variations in the rate at which individuals can realize cold goals, that is, goals that are pursued in the absence of strong implicit motives, incur neither emotional costs nor benefits.

2. Overview of the present research

In the present research, we aimed to replicate and extend Brunstein et al.'s (1998) findings in several ways. First, we wanted to test whether the moderating effect of implicit motivation on the association between goal progress and emotional well-being can also be documented in samples from a different sociocultural background than the German student populations studied by Brunstein et al. (1998). If their findings can be replicated in US American student samples, which are culturally and ethnically more diverse, this would further bolster the validity of the idea that variations in progress on personally meaningful goals affects emotional well-being only to the extent to which such goals are backed up by strong implicit motives (*emotional well-being hypothesis*).

Second, given the link between goal pursuit difficulties and depressive symptoms reviewed in the introduction, we wanted to explore whether the emotional well-being hypothesis also extends to symptoms of depression. Because emotional well-being is closely associated with depressive symptoms (e.g., Watson, 2000), we expected participants who made a lot of progress on motive-supported goals to report few, and participants who made little progress on motive-supported goals to report many, symptoms of depression. For individuals low in implicit motivation, on the other hand, we expected variations in goal achievement to be unrelated to depressive symptoms, because they engage in a cold mode of goal pursuit.

Third, we wanted to examine the role of implicit motivation in the realization of personal goals in more detail. Research by Brunstein and colleagues (Brunstein, 1993; Brunstein et al., 1998) as well as others (e.g., Locke & Latham, 1990) consistently shows that a strong sense of commitment to one's goals has a facilitating effect on subsequent goal progress. However, findings were mixed with regard to the role of implicit motives in the enactment of personal goals. Brunstein et al. (1998) failed to find significant correlations between implicit motives and goal progress in Study 1, and in Study 2 observed a facilitating effect of power and achievement motives on goal progress in the domains of affiliation and intimacy, but not in the domains of power and achievement. Thus, their findings provide some evidence that implicit motives facilitate goal progress, but given the inconsistencies between Brunstein et al's studies, further research on this effect is warranted. In the present research, we were particularly interested in whether a facilitating effect of implicit motives on goal progress would emerge more clearly once goal commitment is being controlled for and whether implicit motivation and goal commitment may have an interactive effect on goal progress (*goal progress hypothesis*). Neither of these possibilities was considered or tested by Brunstein et al. (1998).

The implicit motivation-goal progress correlation in Brunstein et al.'s (1998) Study 2 also suggests that to the extent that implicit motives do facilitate goal progress, a facilitating effect may not be restricted to goals ostensibly in the same motivational domain as a given motive disposition (e.g., a facilitating effect of the power motive on the realization of power goals), but may spill over to other motivational domains, perhaps because complex, long-term goal pursuits are rarely motivationally "pure-bred" but may offer incentives for various motives simultaneously. For instance, the intimacy goal of deepening one's relationship to a romantic partner may not only involve opening up to that person (an intimacy incentive), but also learning to maintain and express a sense of self (an incentive related to power), or developing shared hobbies (which may provide achievement incentives). The multi-faceted nature of personal goals, which allows many different paths to the achievement of one goal and one goal to serve several different functions, has also been recognized by other goal theorists (e.g., Carver & Scheier, 1998). In the present research, we therefore proceeded on the assumption that implicit motives aid goal progress and benefit from it not only within a given motivational domain (i.e., the power motive supporting power goals and reaping satisfaction from their implementation), but also across motivational domains (e.g., the power motive supporting intimacy goals and reaping satisfaction from their implementation). In keeping with this idea, we averaged implicit motive, goal commitment, and goal progress measures each across motivational domains. To verify that the aggregate measures represent an accurate picture of what is going on at the level of individual predictors, we supplemented our analyses with regressions using disaggregated motive and goal variables.

We tested our hypotheses in two cross-sectional studies with large samples. Participants' implicit motives were assessed with a Picture Story Exercise (PSE; cf. McClelland, Koestner, & Weinberger, 1989) similar to the one used by Brunstein et al. (1998). The PSE has been the principal measure of implicit motives for more than 50 years, and its objectivity, reliability (interrater, test–retest), and validity have been established by a

large body of literature (see McClelland et al., 1989; Schultheiss & Pang, 2007; Smith, 1992, for reviews). Participants' goals and estimates of goal commitment and progress were assessed with Brunstein et al.'s (1998) personal goal inventory. To measure participants' depressive symptoms, we administered the widely used Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). To test whether the predicted effects of motive-supported goal progress are specific to depressive states above and beyond other mental health problems or a disposition to frequently experience negative affective states, we controlled for individual differences in symptoms of anxiety, which often has substantial overlap with depression, and trait neuroticism (Watson, 2000). Because extraversion and conscientiousness have been shown to overlap with measures of goal commitment and progress in past research (Little, Lecci, & Watkinson, 1992), we assessed these variables in our participants, too, to determine to what extent the predicted effects of motives and goals on dependent variables were independent of individual differences in these traits.

3. Study 1

3.1. Method

3.1.1. Participants

The sample consisted of undergraduate students ($N = 101$; 58 women, 41 men; 2 did not identify their gender) with an average age of 19 years (range: 18–28 years). The majority of the sample was white (69%); 9% identified themselves as Asian, 4% as African-American, 5% as Hispanic and the rest as American Indian, Pacific Islander, or other. Students participated in the study for course credit, responding to an ad for a study on "Goal striving and cognition". Because not all participants completed all measures, actual Ns range from 98 to 101 in the analyses reported below.

3.1.2. Design and procedure

Using a cross-sectional design, we collected all data in a single testing session lasting approximately 2 h. Participants first filled out a mood questionnaire containing a hedonic tone scale, then wrote stories on the PSE which were later coded for implicit motive imagery, and completed a personal goal inventory. After several tasks unrelated to the findings reported here, participants filled out a Big-Five trait questionnaire and depression and anxiety inventories.

3.1.3. Implicit motivation

Implicit motives were assessed by having participants write imaginative stories about six pictures: ship captain, couple by river, trapeze artists, women in laboratory (Smith, 1992), boxer (McClelland & Steele, 1972), and nightclub scene (McClelland, 1975). Pictures were presented in random order, using standard instructions and procedures described in Smith (1992). Stories were later coded for motivational imagery by a trained scorer using Winter's (1994) *Manual for Scoring Motive Imagery in Running Text*. According to the manual, power imagery is scored whenever a story character shows a concern with having impact on others through strong, forceful actions, controlling, influencing, helping, impressing or eliciting emotions in others. 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. 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 others, sadness about separation, affiliative activities, or friendly, nurturing acts. The scorer had previously exceeded 85% interrater agreement on calibration materials prescored by an expert that are contained in the manual and was blind with regard to participants' gender and scores on the other measures. On average, participants wrote 594 words ($SD = 125$), containing 4.70 ($SD = 2.78$) power, 6.10 ($SD = 3.06$) affiliation–intimacy, and 4.08 ($SD = 2.32$) achievement images summed across all six stories. Because longer protocols were significantly associated with more imagery for each motive ($rs \geqslant .36$, $ps \leqslant .0005$), we regressed word count sum scores from each of the three motive imagery sum scores and converted the residuals to z scores. The three z scores were then averaged to yield an overall measure of implicit motivation, which reflected the combined strength of participants' needs for power, achievement, and affiliation–intimacy.

3.1.4. Personal goal assessment

Participants' personal goals within the domains intimacy, achievement, and power were assessed with Brunstein et al.'s (1998) personal goal inventory. Participants were asked to generate a list of three personal goals according to the guidelines specified in the instructions. They were first told that "personal goals refer to the objectives, plans, and projects that you have pursued lately and that you intend to work on in the near future". They were then asked to list one goal within each of three striving areas: (a) "striving for intimacy and interpersonal closeness" (intimacy), (b) "striving for achievement and mastery experiences" (achievement), and (c) "striving for independence, social influence, and self-reliance" (power). Each striving area was illustrated by a number of examples adopted from pilot work. All participants listed three goals and assigned one goal to each of the three striving areas. Subsequently, they rated each goal on 4-item scales assessing their goal commitment (e.g., "No matter what happens, I will not give up this goal") and their goal progress (e.g., "I have quite a lot of success in pursuing this goal"). Response scales ranged from 1 (*disagree strongly*) to 5 (*agree strongly*). To obtain overall goal commitment and goal progress scores, we averaged item scores on each scale across the three motivational domains. Coefficient alphas for these aggregated measures were .78 for the 12 (3 domains × 4 items) commitment items and .77 for the 12 goal progress items. (Within each of the three motivational domains, coefficient alphas ranged between .67 and .78 for the goal commitment scale and between .83 and .89 for the goal progress scale.)

3.1.5. Self-reported affect

Participants' affect was assessed with the hedonic tone scale from the University of Wales Mood Adjective Check List (UMACL; Matthews, Jones, & Chamberlain, 1990), which consists of the items *happy*, *satisfied*, *contented*, *cheerful*, *sad*, *depressed*, *dissatisfied*, and *sorry*. Items were presented in random order with the primer "Over the last couple of days I have felt…" and participants could endorse each item on a 4-point scale featuring the gradations *definitely not*, *slightly not*, *slightly*, and *definitely*. After recoding of negative-affect items, a hedonic tone sum score was calculated. Coefficient alpha of the hedonic tone scale was .84 in the present study.

3.1.6. Depressive symptoms

Participants completed the 21-item form of the BDI (Beck et al., 1961). Coefficient alpha of the BDI was .90 in the present study. Because BDI scores, which ranged from 0 to 43, had a skewed distribution, we subjected them with a log transformation, using the formula: log BDI = log (1.5 + raw BDI scores). The transformed scores were normally distributed.

3.1.7. Anxiety symptoms

To control for the often considerable overlap between depressive symptoms with symptoms of anxiety, we administered the 21-item Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988). Coefficient alpha of the BAI was .92 in the present study. Like the BDI scores, BAI scores had a skewed distribution. We therefore subjected them to the same log transformation as the BDI scores to obtain a normal score distribution.

3.1.8. Personality traits

Trait extraversion, neuroticism, and conscientiousness were assessed with 10-item scales from the International Personality Item Pool (2001). Coefficients alpha were .86 for extraversion, .87 for neuroticism, and .78 for conscientiousness in the present study.

3.2. Results and discussion

3.2.1. Zero-order correlations

As in previous studies (e.g., Brunstein et al., 1998; Schultheiss & Brunstein, 2001), implicit motivation did not significantly overlap with goal commitment, goal progress, or trait measures (cf. Table 1). We also tested whether disaggregated implicit motive scores were correlated with disaggregated goal commitment scores, but all correlations within and across the domains power, achievement, and affiliation–intimacy were less than |.08|

Table 1
Descriptive statistics and correlations for variables in Study 1

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Implicit motivation	0.00	0.58	—									
2. Goal commitment	4.11	0.51	−.02	—								
3. Goal progress	3.61	0.61	.05	.50****	—							
4. Hedonic tone	2.96	0.60	.15	.15	.33****	—						
5. BDI	8.08	7.93	−.17	−.19*	−.32***	−.45****	—					
6. BDI (log)	1.98	0.77	−.20*	−.21*	−.39****	−.57****	.88****	—				
7. BAI (log)	2.14	0.95	−.14	−.14	−.25*	−.53****	.60****	.62****	—			
8. Neuroticism	3.00	0.82	.00	−.20*	−.25*	−.57****	.46****	.49****	.40****	—		
9. Extraversion	3.40	0.78	.07	.04	.15	.06	−.09	−.06	−.07	−.03	—	
10. Conscientiousness	3.59	0.65	.09	.20*	.39****	.24*	−.22	−.23*	−.16	−.22*	.31***	—
11. Gender	1.41	0.50	−.09	.04	−.10	.06	−.03	−.07	−.11	−.01	−.13	−.29***

Note. Due to missing data, pairwise $N = 98$–101. BDI, Beck Depression Inventory; log, log-transformed. Gender: 1, female; 2, male.
* $p < .05$.
*** $p < .005$.
**** $p < .001$.

and non-significant. Notably, however, higher levels of implicit motivation were associated with fewer depressive symptoms on the BDI. High levels of goal commitment were associated with greater goal progress and lower BDI scores, and high rates of goal progress were the best non-mood predictor of low levels of depressive symptoms on the BDI.

3.2.2. Predicting goal progress

To test our goal progress hypothesis, we ran a regression analysis with goal commitment, implicit motivation, and the goal commitment × implicit motivation interaction term as predictors and goal progress as dependent variable.[1] Because goal progress was strongly and uniquely associated with both neuroticism and conscientiousness, which together explained 18% of the variance in goal progress, we controlled for these variables in the goal progress regression model. At the main effect level, only goal commitment was a significant positive predictor of goal progress, $B = 0.516$, $SE = 0.103$, $t(93) = 5.01$, $p < .000005$. But we also found a significant goal commitment × implicit motivation effect for goal progress, $B = -0.375$, $SE = 0.191$, $t(92) = -1.96$, $p = .05$. As shown in Table 2, this effect was due to a marginally significant positive correlation between implicit motivation and goal progress in low-commitment individuals which was not present in high-commitment individuals.

3.2.3. Predicting emotional well-being

Replicating earlier findings reported by Brunstein et al. (1998), we obtained a significant goal progress × implicit motivation effect, $B = 0.420$, $SE = 0.168$, $t(95) = 2.50$, $p = .01$. Further analyses revealed that goal progress translated into increased emotional well-being only among individuals with high levels of implicit motivation, but not in individuals low in this variable (cf. Table 3).

3.2.4. Predicting depressive symptoms[2]

In an attempt to extend the emotional well-being hypothesis to depressive symptoms, we regressed log-transformed BDI scores on goal progress, implicit motivation, and their multiplicative interaction term. We

[1] In this and all following analyses, effects were tested hierarchically, with covariates entered first, followed by the main effects in the second step, followed by the interaction effects in the third step. Tests of main and interaction effects are based on unstandardized variables and their multiplicative interaction terms.

[2] For these analyses, we dropped one case that had high leverage (> .20), high studentized residuals (> 3.5) or both across all regressions. The participant was characterized by high goal progress, low depressive symptoms, low implicit motivation, but a markedly above-average score on the BAI. With the case included, both the first-order effects of implicit motivation and goal progress and the second-order effect of their interaction remained significant in the absence of covariates, $ps < .05$.

Table 2
(Partial) correlations between implicit motivation and goal progress in individuals high ($n = 54$) and low ($n = 44$) in goal commitment (Study 1)

	Goal commitment			
	High (>Md)		Low (⩽Md)	
	r	*p*	*r*	*p*
Goal progress	−.04	.78	.15	.34
Goal progress (par.N&C)	−.11	.42	.28	.08

Note. par.N&C, partialled for Neuroticism and Conscientiousness.

Table 3
(Partial) correlations between goal progress and hedonic tone and BDI scores for individuals high ($n = 48$) and low ($n = 50$ for hedonic tone, $n = 49$ for BDI[1]) in implicit motivation (Study 1)

	Implicit motivation			
	High (⩾Md)		Low (<Md)	
	r	*p*	*r*	*p*
Hedonic tone	.54	.00007	.06	.67
Hedonic tone (par.N)	.40	.005	.05	.72
BDI	−.53	.0001	−.17	.24
BDI (log)	−.55	.00006	−.16	.25
BDI (log, par.N)	−.42	.003	−.17	.24
BDI (log, par.BAI)	−.45	.001	−.13	.39
BDI (log, par.HT)	−.26	.08	.19	.20

Note. par.N, partialled for neuroticism; par.BAI, partialled for log-transformed BAI scores; par.HT, partialled for hedonic tone scores; log, log-transformed.

found both implicit motivation, $B = -0.289$, $SE = 0.121$, $t(94) = -2.40$, $p = .02$, and goal progress, $B = -0.448$, $SE = 0.113$, $t(94) = -3.98$, $p = .0001$, to be significant unique predictors of low depressive symptomatology. Together, they accounted for 19.9% of the variance in depressive symptoms. These first-order effects remained fully significant when we controlled in addition for variations in neuroticism, anxiety, or hedonic tone ($ps < .05$). A significant goal progress × implicit motivation effect, $B = -0.677$, $SE = 0.213$, $t(93) = -3.18$, $p = .002$, explained an additional 7.8% of the variance in BDI scores. As shown in Table 3, this effect was primarily due to individuals high in implicit motivation, who had significantly higher BDI scores when they failed to realize their goals than when they made progress towards their goals. In contrast, BDI scores were largely independent of goal progress in individuals low in implicit motivation. This interaction also remained significant when we controlled for log-transformed BAI scores, neuroticism scores, or hedonic tone ($ps < .05$). This finding suggests that in individuals with strong implicit motives, goal progress has a specific effect on depressive states, above and beyond the covariation of depressive symptoms with neuroticism, anxiety, or emotional well-being.

3.2.5. Supplemental analyses

We tested whether participant gender moderated any of the effects reported above, but without significant results, $ps > .10$. Thus, the joint effect of goal commitment and implicit motivation on goal progress did not depend on participants' gender, and neither did the joint effects of goal progress and implicit motivation on hedonic tone and BDI scores.

Using set correlation, the multivariate generalization of multiple regression analysis (Cohen & Cohen, 1983), we found that, overall, our results stood up to scrutiny when we repeated our analyses with disaggregated goal commitment, goal progress, and implicit motivation variables. After controlling for covariates (neuroticism, conscientiousness) and main effects, 7 of the 9 unique effects resulting from the 3 interaction terms (Intimacy goal commitment × affiliation motive, achievement goal commitment × achievement motive, power goal commitment × power motive) × 3 dependent variables (intimacy, achievement, and power goal

progress) had a negative sign, suggesting that the negative-sign interaction effect we found for the aggregated measures reflects a relatively consistent pattern of individual interaction effects at the disaggregated variable level. Similarly, when we repeated the analysis that had yielded the significant Implicit Motivation × Goal Progress on BDI Scores effect with disaggregated first-order effect variables, and three within-domain Implicit Motivation × Goal Progress interaction terms, and log-transformed BDI scores as dependent variable, all three interaction terms had negative betas. This finding, too, suggests that the negative-sign interaction effect we found for the aggregated measures can be viewed as an accurate, parsimonious, and statistically sensitive representation of the individual interaction effects at the disaggregated variable level.

4. Study 2

In Study 2, we tried to replicate the moderating effects of implicit motives on the link between goal progress and depressive symptoms. In addition, we aimed to replicate and further explore the observation that in the absence of a strong goal commitment, high levels of implicit motivation are associated with goal progress. We speculated that implicit motives facilitate an intuitive mode of goal pursuit, in which individuals can draw on non-conscious behavioral strategies and schemata built by their implicit motives.

Direct evidence for a role of implicit motives in the shaping and recruitment of intuitive behavioral strategies comes primarily from two lines of research. First, implicit motives contribute to the non-conscious acquisition of behaviors that are instrumental for attaining motivational incentives and avoiding disincentives (e.g., Schultheiss, Pang, Torges, Wirth, & Treynor, 2005; Schultheiss et al., 2005). Second, implicit motives predict the spontaneous display of non-verbal behaviors that facilitate incentive attainment, such as smiling and eye contact in the case of people high in the need for affiliation–intimacy or non-verbal signals giving the impression of high competence in the case of individuals high in the need for power (e.g., McAdams, Jackson, & Kirshnit, 1984; Schultheiss & Brunstein, 2002). Intuitive behavioral functions of implicit motives have also been emphasized by various conceptual accounts of implicit motivation and are in keeping with the non-conscious nature of implicit motives (Cantor & Blanton, 1996; Kuhl, 2001; McClelland et al., 1989; Schultheiss, 2001).

We furthermore suggest that the motive-based intuitive mode of goal pursuit contrasts with an analytical, strategic mode promoted by a strong goal commitment. This assumption is corroborated by a thought-sampling study by Klinger, Barta, and Maxeiner (1980), who demonstrated that individuals report thinking a lot about those personal goals that they feel strongly committed to. It is also consistent with conceptual accounts that stress the strategic, effortful quality of the pursuit of highly valued goals (e.g., Cantor & Blanton, 1996) and that attribute a key role to analytic thought in the enactment of multi-step goals (e.g., Kuhl, 2001).

A specific prediction following from the intuitive/analytical goal pursuit distinction is that the degree to which individuals think about their goals should differentiate those high in implicit motivation but low in goal commitment from those low in implicit motivation but high in goal commitment: the former should achieve goal progress without thinking much about their goals, whereas the latter should engage in goal-related thoughts. To test this *goal rumination hypothesis*, we assessed participants' mental preoccupation with a given goal by including a goal rumination scale.

4.1. Method

4.1.1. Participants, design, and procedure

The sample consisted of undergraduate and graduate students ($N = 100$; 48 women, 52 men) with an average age of 21 years (range: 18–50 years). The majority of the sample was white (68%); 16% identified themselves as Asian, 7% as African-American, 5% as Hispanic and the rest as American Indian, Pacific Islander, or other. About half of all students participated in the study for course credit and the other half for a payment of $20. Participants were recruited with an ad for a study on "Goal striving and cognition". Using a cross-sectional design, we collected all data in a single testing session lasting approximately 2 h. All instruments and procedures were identical to those in Study 1, except where indicated. Because of scattered missing data, actual *N*s range from 96 to 100 in the analyses reported below.

4.1.2. Implicit motivation

The same scorer as in Study 1 scored all PSE stories. He was blind with regard to participants' gender and scores on the other measures. On average, participants wrote 618 words ($SD = 127$), containing 5.51 ($SD = 2.70$) power, 6.17 ($SD = 2.57$) affiliation–intimacy, and 4.91 ($SD = 2.69$) achievement images summed across all six stories. Because longer protocols were significantly associated with more imagery for each motive ($rs \geqslant .35$, $ps \leqslant .0005$), we regressed word count sum scores from each of the three motive imagery sum scores and converted the residuals to z scores and averaged them to obtain an overall measure of implicit motivation.

4.1.3. Personal goal assessment

We added a 7-item scale to the personal goal inventory that assessed participants' tendency to ruminate about their goals with the following items: "I find myself thinking about this goal even if I don't want to", "I go round and round in my mind about this goal", "I obsess about this goal", "I find it hard to shut off thoughts about this goal", "I don't ruminate or dwell on this goal for very long", "I can easily put this goal off my mind", "I rarely think about this goal" (the last three items were scored in reverse). Items were formulated to reflect the degree to which participants' thinking was preoccupied with a given goal, but not the affective content of these thoughts. To obtain overall goal commitment, progress, and rumination scores, we averaged item scores on each scale across the three motivational domains. Coefficient alphas for these aggregated measures were .76 for the 12 (3 domains × 4 items) commitment items, .78 for the 12 goal progress items, and .87 for the 21 (3 domains × 7 items) goal rumination items. (Within each of the three motivational domains, coefficient alphas ranged between .65 and .76 for the goal commitment scale, between .80 and .82 for the goal progress scale, and between .84 and .89 for the goal rumination scale.)

4.1.4. Self-reported affect

Coefficient alpha of the hedonic tone scale was .85.

4.1.5. Depressive symptoms

Coefficient alpha of the BDI was .94. Scores ranged from 0 to 54 and were subjected to the same log transformation as in Study 1.

4.1.6. Anxiety symptoms

Coefficient alpha of the BAI was .96. Scores were subjected to the same log transformation as in Study 1.

4.1.7. Negative emotionality

We assessed participants' trait disposition to experience negative emotions with the scale Negative Emotionality (NEM) from the Iowa Personality Questionnaire (IPQ; Donnellan, Conger, & Burzette, 2005), a short version of Tellegen's Multidimensional Personality Questionnaire (Tellegen & Waller, in press). Coefficient alpha was .72 for the 15-item negative emotionality scale.

4.2. Results and discussion

4.2.1. Zero-order correlations

Like in Study 1, implicit motivation did not significantly overlap with goal commitment, goal progress, or trait measures of positive emotionality and control (cf. Table 4). We also tested whether disaggregated implicit motive scores were correlated with disaggregated goal commitment scores. With the exception of a significant correlation of −.22 between implicit power motivation and achievement goal commitment ($p < .05$), all correlations within and across the domains power, achievement, and affiliation–intimacy were less than |.14| and non-significant.[3] In contrast to Study 1, the zero-order correlations between implicit motivation and

[3] In this study, an independent coder checked whether goal descriptions given by participants matched with the goal categories assigned by the personal goal inventory. Of the 291 goals listed by participants, only 7 (or 2.4%) did not match the assigned category (e.g., a power-related goal listed as an affiliation-intimacy striving). Thus, like in the earlier studies by Brunstein et al. (1998), participants did not have difficulties to list goals that fit the prescribed categories.

Table 4
Descriptive statistics and correlations for variables in Study 2

Variable	M	*SD*	1	2	3	4	5	6	7	8	9	10
1. Implicit motivation	0.00	0.58	—									
2. Goal commitment	3.93	0.56	−.01	—								
3. Goal progress	3.46	0.61	−.01	.13	—							
4. Goal rumination	3.32	0.64	−.16	.40****	−.33****	—						
5. Hedonic tone	2.95	0.63	.09	.02	.38****	−.34****	—					
6. BDI	8.94	9.79	−.05	−.01	−.29***	.30***	−.60****	—				
7. BDI (log)	1.98	0.88	−.09	−.00	−.33****	.38****	−.64****	.86****	—			
8. BAI (log)	2.08	0.98	−.05	−.00	−.25*	.36****	−.41****	.57****	.54****	—		
9. NEM	13.67	2.42	.23*	−.07	−.36****	.33****	−.34****	.17	.30***	.26**	—	
10. Gender	1.52	0.50	−.05	−.18	.04	−.16	.00	−.08	−.17	−.08	−.01	—

Note. Due to missing data, pairwise $N = 96$–100. BDI, Beck Depression Inventory; BAI, Beck Anxiety Inventory; NEM, Negative Emotionality; Gender: 1, female; 2, male; log, log-transformed.

* $p < .05$.
** $p < .01$.
*** $p < .005$.
**** $p < .001$.

the BDI variables were non-significant, but implicit motivation showed a slight significant overlap with negative emotionality. When we partialled for NEM scores, the negative association between implicit motivation and log-transformed BDI scores we had observed in Study 1 emerged at the trend level, partial $r = -.17$, $p = .09$. High levels of goal commitment were associated with high levels of goal rumination, and high rates of goal progress were a strong predictor of low levels of depressive symptoms (BDI). Interestingly, however, goal rumination was an even stronger statistical predictor of depressive symptoms than goal progress. Thus, consistent with earlier findings by Nolen-Hoeksema (2000) and Klinger et al. (1980), dwelling on one's goals was related to more, and achieving one's goals to fewer depressive symptoms.

4.2.2. Predicting goal progress and goal rumination

To test our goal progress and rumination hypotheses, we ran two regression analyses with goal commitment, implicit motivation, and the goal commitment × implicit motivation interaction term as predictors and goal progress and rumination as dependent variables. The main effects of implicit motivation and goal commitment failed to become significant; but we found a significant goal commitment × implicit motivation effect for goal progress, $B = -0.412$, $SE = 0.211$, $t(93) = -1.96$, $p = .05$, which remained robustly significant when we controlled for NEM, $p < .05$. As shown in Table 5, the effect was due to a significant positive correlation between implicit motivation and goal progress in low-commitment individuals, partialling for NEM; this association was not present in high-commitment individuals.

Next, we ran a regression with goal rumination as dependent variable, NEM as covariate, and implicit motivation, goal commitment, and their interaction term as predictors. We obtained significant main effects

Table 5
(Partial) correlations between implicit motivation and goal progress and goal rumination in individuals high ($n = 48$) and low ($n = 48$) in goal commitment (Study 2)

	Goal commitment			
	High (⩾Md)		Low (<Md)	
	r	*p*	*r*	*p*
Goal progress	−.24	.10	.18	.23
Goal progress (par.NEM)	−.19	.20	.30	.04
Goal rumination	−.00	.98	−.28	.05
Goal rumination (par.NEM)	−.09	.54	−.42	.004

Note. par.NEM, partialled for Negative Emotionality.

of goal commitment, $B = 0.478$, $SE = 0.094$, $t(92) = 5.08$, $p < .000005$, and implicit motivation, $B = -0.280$, $SE = 0.094$, $t(92) = -2.99$, $p = .004$. Thus, people with high implicit motivation were less prone to ruminate about their goals and people with high goal commitment were more likely to ruminate. This effect was qualified by a marginally significant goal commitment × implicit motivation effect, $B = 0.319$, $SE = 0.177$, $t(91) = 1.80$, $p = .07$. As shown in Table 5, the interaction was due to a damping effect of implicit motivation on goal rumination in low-commitment participants.

Because implicit motivation was associated with low rumination and high goal progress among low-commitment individuals, we next tested whether implicit motivation facilitated goal progress by restraining the degree to which individuals ruminated about their goals. Such a mediating role of low goal rumination for goal progress would be consistent with our hypothesis that people with strong implicit motives make more progress because they rely on their intuitions and do not think too much about their goals. We first examined the correlation between goal rumination and goal progress in individuals low in goal commitment and found it to be strong and negative, $r = -.50$, $p < .0005$. Next, we ran regression analyses for low-commitment individuals, one set with goal rumination and one set with goal progress as dependent variable and the other variable serving as a mediator, respectively, along with the predictor implicit motivation and the covariate NEM. Inclusion of goal rumination as a mediator reduced the effect of implicit motivation on goal progress substantially, from $B = 0.260$, $SE = 0.124$, $t(45) = 2.10$, $p < .05$ to $B = 0.132$, $SE = 0.130$, $t(44) = 1.02$, $p = .31$, or from 8.9% to 3.4% of variance accounted for in residual goal progress scores. Inclusion of goal progress as a mediator reduced the effect of implicit motivation on goal rumination only slightly, from $B = -0.370$, $SE = 0.120$, $t(45) = -3.08$, $p < .005$ to $B = -0.285$, $SE = 0.120$, $t(44) = -2.38$, $p < .05$, or from 17.5% to 11.5% of variance accounted for in residual goal rumination scores. This suggests that low-commitment individuals high in implicit motivation achieved high goal progress precisely because they scarcely thought about their goals.

4.2.3. Predicting emotional well-being

Replicating our findings from Study 1 and findings reported by Brunstein et al. (1998), we obtained a marginally significant goal progress × implicit motivation effect, $B = 0.330$, $SE = 0.181$, $t(92) = 1.82$, $p = .07$, which became fully significant when we controlled for differences in NEM, $B = 0.357$, $SE = 0.174$, $t(91) = 2.05$, $p < .05$. As shown in Table 6, goal progress and hedonic tone scores correlated significantly and positively among individuals high in implicit motivation, but had little overlap in individuals with low implicit motivation.

4.2.4. Predicting depressive symptoms

Regressing log-transformed BDI scores on negative emotionality (covariate), goal progress, implicit motivation, and their multiplicative interaction term, we found both implicit motivation, $B = -0.251$, $SE = 0.150$, $t(91) = -1.67$, $p = .10$, and goal progress, $B = -0.356$, $SE = 0.148$, $t(91) = -2.41$, $p = .02$, to be unique first-

Table 6
(Partial) correlations between goal progress and hedonic tone and BDI scores for individuals high ($n = 48$) and low ($n = 48$) in implicit motivation (Study 2)

	Implicit motivation			
	High (⩾Md)		Low (<Md)	
	r	*p*	*r*	*p*
Hedonic tone	.50	.0003	.28	.06
Hedonic tone (par.NEM)	.45	.002	.11	.46
BDI	−.57	.00003	−.07	.65
BDI (log)	−.54	.00008	−.14	.34
BDI (log, par.NEM)	−.48	.0007	−.08	.60
BDI (log, par.BAI)	−.47	.0008	−.01	.94
BDI (log, par.HT)	−.29	.05	.01	.92

Note. par.NEM, partialled for Negative Emotionality; par.BAI, partialled for log-transformed BAI scores; par.HT, partialled for hedonic tone scores; log, log-transformed.

order predictors of low depressive symptomatology. Together, they accounted for 8.5% in the residual variance of depressive symptoms after controlling for negative emotionality. These main effects were qualified by a significant goal progress × implicit motivation effect, $B = -0.543$, $SE = 0.248$, $t(90) = -2.19$, $p = .03$, which explained an additional 4.2% of the variance in log-transformed BDI scores. The interaction term remained fully significant when we included log-transformed BAI scores as covariate, both NEM and BAI scores as covariates, or dropped all covariates from the analysis ($ps < .05$). Replicating the pattern of results in Study 1, the interaction effect was due to individuals high in implicit motivation, who had high BDI scores when they failed to realize their goals, and reported virtually no depressive symptoms when they succeeded in achieving their goals. In contrast, BDI scores were independent of goal progress in individuals low in implicit motivation (cf. Table 6). Our findings therefore underscore our conclusion from Study 1: in individuals with strong implicit motives, goal progress has a specific effect on depressive symptoms, above and beyond the effect of variables that are known to share substantial variance with depressive symptoms (i.e., anxiety and negative emotionality). Unlike in Study 1, main effects of implicit motivation and goal progress or the implicit motivation × goal progress interaction on BDI scores were no longer significant after controlling for hedonic tone.

The analyses reported under "Predicting goal progress and goal rumination" had revealed a facilitating effect of implicit motivation on goal progress and a restraining effect on goal rumination specifically among low-commitment individuals. We therefore wondered if implicit motivation had a significant effect on measures of well-being and depressive symptoms in low-commitment individuals and, if so, if the effect was mediated by goal rumination, goal progress, or both. We first tested if implicit motivation had a direct positive effect on low-commitment individuals' affective state. Implicit motivation was significantly associated with high hedonic tone scores, $B = 0.255$, $SE = 0.123$, $t(45) = 2.07$, $p = .04$, and low log-transformed BDI scores, $B = -0.364$, $SE = 0.188$, $t(44) = -1.94$, $p = .05$, partialling for differences in NEM.

Next, we examined whether in low-commitment individuals variations in goal progress and goal rumination accounted for significant portions of variance in measures of affect, again controlling for trait negative emotionality. Goal progress had significant unique overlap with hedonic tone scores, $B = 0.389$, $SE = 0.136$, $t(46) = 2.85$, $p = .007$, and log-transformed BDI scores, $B = -0.556$, $SE = 0.207$, $t(45) = -2.68$, $p = .01$. Likewise, goal rumination was a specific significant predictor of hedonic tone scores, $B = -0.302$, $SE = 0.134$, $t(46) = -2.26$, $p = .03$, and log-transformed BDI scores, $B = 0.519$, $SE = 0.199$, $t(45) = 2.62$, $p = .01$.

Because in low-commitment individuals implicit motivation, goal measures and affect measures were all significantly related with each other and thus fulfilled the requirements of mediation analysis (cf. Baron & Kenny, 1986), we finally tested whether inclusion of either goal progress or goal rumination in regressions of affect measures on implicit motivation (controlling for NEM) would render the implicit motivation → affect link non-significant, which would suggest that it is mediated by these variables. In the presence of the goal rumination variable, the effect of implicit motivation became smaller and non-significant for both hedonic tone, $B = 0.182$, $SE = 0.135$, $t(44) = 1.35$, $p = .18$, and log-transformed BDI scores, $B = -0.217$, $SE = 0.201$, $t(43) = -1.08$, $p = .29$, while goal rumination remained a marginally significant ($p < .09$) predictor of BDI scores, but not of hedonic tone scores. These findings indicate that in low-commitment individuals high in implicit motivation, goal rumination was a partial mediator of the effect of implicit motivation on depressive symptoms. However, a mediating effect of goal rumination could not be clearly established for hedonic tone.

When we repeated these analyses for goal progress as a statistical mediator, the effect of implicit motivation became smaller and non-significant for both hedonic tone, $B = 0.172$, $SE = 0.124$, $t(44) = 1.39$, $p = .17$, and log-transformed BDI scores, $B = -0.246$, $SE = 0.189$, $t(43) = -1.30$, $p = .20$, while goal progress remained a significant predictor of affect in both cases, $ps < .05$. This suggests that low-commitment individuals high in implicit motivation experienced enhanced well-being and low depressive symptoms because they achieved more goal progress than individuals low in both goal commitment and implicit motivation.

Because we had two mediators and each of them has been associated with depressive symptoms in earlier research (e.g., Lecci et al., 1994; Nolen-Hoeksema, 2000), we finally tested whether in low-commitment participants goal progress mediated the effect of goal rumination on measures of affect. After controlling for goal progress in addition to negative emotionality, the effect of goal rumination was reduced and non-significant for hedonic tone, $B = -0.176$, $SE = 0.143$, $t(45) = -1.23$, $p = .22$, and for log-transformed BDI scores, $B = -0.356$, $SE = 0.214$, $t(44) = 1.67$, $p = .10$. Notably, in these regressions goal progress remained a signif-

icant positive predictor of hedonic tone ($p < .05$) and a marginally significant negative predictor of depressive symptoms ($p = .08$), suggesting that variations in goal progress transmit the effect of goal rumination on hedonic tone and depressive symptoms in low-commitment individuals. This may also explain why goal progress, relative to goal rumination, was the more potent mediator of the effects of implicit motivation on affect measures in the aforementioned analyses.

4.2.5. Supplemental analyses

We tested whether participant gender moderated any of the effects reported above, but without significant results, $ps > .10$. Thus, neither the joint effects of goal commitment and implicit motivation on goal progress and goal rumination, nor the joint effects of goal progress and implicit motivation on hedonic tone and BDI scores were conditioned by participants' gender.

Like in Study 1, we also verified that the aggregation of motive and goal scales in the analyses reported above was warranted. All 9 unique effects resulting from the 3 goal commitment × implicit motive interaction terms and the 3 goal-progress criterion variables had a negative sign and 5 had a t value exceeding 1, suggesting that the negative-sign interaction effect we found for the aggregated measures parsimoniously captures a robust and consistent pattern of individual interaction effects at the disaggregated variable level. We repeated this analysis with the set of disaggregated goal rumination scores as dependent variable, and found that 7 of the 9 unique effects of the interaction terms had a positive sign similar to the direction of the effect we had obtained with the aggregated measures. Finally, we also repeated the analysis that had yielded the significant Implicit Motivation × Goal Progress on BDI scores effect with disaggregated motive and goal progress scores and their within-domain interaction terms as predictors and log-transformed BDI scores as dependent variable. The interaction terms involving power and achievement had a negative sign; the effect of the intimacy interaction was close to zero. Overall, our findings suggest that the aggregated implicit motive and goal progress measures we had used in our main analyses represent individual motive/goal effects sufficiently well to warrant the aggregation.

5. General discussion

Based on findings from an earlier set of studies reported by Brunstein et al. (1998), we had predicted that individuals' emotional well-being and depressive symptoms are contingent on the successes and failures they encounter in the realization of personal goals only to the extent that goal striving is supported by strong implicit motives (*emotional well-being hypothesis*). Moreover, we had reasoned that high levels of implicit motivation and high levels of goal commitment can independently contribute to successful goal achievement (*goal progress hypothesis*) and in Study 2 extended on this idea by suggesting that high implicit motivation facilitates goal progress via an intuitive mode of goal pursuit, whereas high goal commitment may help individuals achieve their goals by frequently thinking about them (*goal rumination hypothesis*).

We found strong support for the emotional well-being hypothesis across both studies and for measures of self-reported affect and depressive symptoms alike. Replicating and extending on results that Brunstein et al. (1998) obtained with German student samples, we found that individuals with strong implicit motives experienced feelings of happiness and very few depressive symptoms when they reported high levels of goal progress, but low levels of happiness and many depressive symptoms when they felt they made little progress towards their personal goals. With only one exception (hedonic tone in Study 1), this effect remained remarkably robust when we controlled for variations in trait measures of negative emotionality and, in the case of depressive symptoms, for variations in anxiety symptoms. This suggests that successes and failures in the "hot" mode of goal pursuit (i.e., the pursuit of motive-supported goals) had specific effects on hedonic tone and depressive symptoms, above and beyond other personality dispositions or mental health problems. The size of these effects was equally remarkable: consistently, roughly 25% of the variance in happiness and depression measures were accounted for by variations in goal progress in individuals high in implicit motivation. In individuals low in implicit motivation, on the other hand, emotional well-being was not contingent on goal progress, and goal progress typically shared substantially less than 8% of variance with happiness and depression measures.

We also obtained consistent support for the goal progress hypothesis. In both studies, high levels of implicit motivation were associated with high rates of progress in the pursuit of personal goals, but only in individuals

who did not feel overly committed to their goals. In a sense, these participants seemed to succeed without trying too hard. Thus, although individuals endowed with strong implicit motives may be more vulnerable to depressed mood as a result of blocked goal pursuits, they appear to offset this vulnerability by being resourceful at realizing their goals. This may explain why individuals high in implicit motivation tended to have fewer depressive symptoms overall in both studies. Interestingly, high levels of goal commitment, a variable that has been shown to contribute to the successful pursuit of personal goals in several previous studies (e.g., Brunstein, 1993; Brunstein et al., 1996), turned out to be a less reliable predictor of goal progress in the present research: it was associated with high levels of goal progress only in Study 1, but not in Study 2.

In Study 2, we shed further light on the nature of the implicit motivation-goal progress link by testing the goal rumination hypothesis. Mediation analyses revealed that in participants low in goal commitment, a lack of goal-related ruminations mediated the positive effect of implicit motivation on goal progress and thus on measures of happiness and depressive symptoms in this group. These findings suggest that individuals with strong implicit needs, but low explicit commitment to their goals were successful at realizing their goals and reaping hedonic rewards because they did not consciously think much about their goals at all. They were thus able to avoid the pitfalls of rumination, of "over-thinking" their goals, a cognitive style that in the present research and in many other studies has been linked to low mood and depression (e.g., Nolen-Hoeksema, 2000) and that may incur these costs because maintaining difficult intentions active in working memory leads to a down-regulation of positive affect and thus the zest needed to enact them (Kuhl, 2001). Consistent with this latter notion, we found that among uncommitted goal strivers, low goal progress was a statistical mediator of the effect of goal rumination on low mood and high depressive symptoms.

5.1. Implications

The present findings are consistent with theoretical models that distinguish two independent behavior-guiding systems in humans: an automatic, non-verbal, hedonically oriented implicit motivation system and an effortful, language-based, socially oriented explicit goal pursuit system (Cantor & Blanton, 1996; McClelland et al., 1989; Rolls, 1999; Schultheiss, in press). Our results illustrate three key properties of these systems: (a) they differ in the way they influence behavior, (b) they differ in their capacity to generate affective states, and (c) they interact with each other to shape behavior and experience.

The observed difference in goal ruminations between uncommitted goal strivers high in implicit motivation and committed goal strivers low in implicit motivation is consistent with Cantor and Blanton's (1996) distinction between effortless and effortful modes of motivation. These authors characterized activities driven by implicit motives as "spontaneously happening", "independent of self-regulation, personal commitment, or judgment and choice", removed from the conscious awareness of the person, and directed towards hedonic fulfillment (Cantor & Blanton, 1996, p. 338). They contrasted this with the effortful nature of personal goal pursuits, which depend on self-reflection, commitment, and strategic problem solving, and often require the execution of behavior that is not aimed at hedonic fulfillment. Our findings suggest that despite differences in the degree to which implicit motivation and explicit goals instigate a conscious mental preoccupation with desired outcomes, goal progress is not only driven by a strong goal commitment, but can also be independently promoted by implicit motivation.

Our findings also highlight an important affective asymmetry between the implicit motivation system and the explicit goal pursuit system. Contrary to earlier accounts assigning hedonic properties to explicit goal pursuits (e.g., Diener & Fujita, 1995), but in perfect agreement with the findings reported by Brunstein et al. (1998) and our conceptualization of a cold mode of goal pursuit, variations in goal progress had *no* detectable consequence for individuals' emotional well-being in the absence of strong implicit motives. This suggests that the explicit system does not by itself generate the hedonic states associated with goal-related successes or failures.[4] Rather, our findings indicate that the implicit motivational system is responsible for these affective

[4] It is presently unclear whether this conclusion also extends to explicit motives, that is, the enduring needs for power, achievement and affiliation that people attribute to themselves, that can be assessed via self-report, and that are also assumed to belong to the explicit motivational system. Further research is needed to shed light on this issue.

responses: only in individuals with strong implicit motives did high or low goal progress amount to the difference between blissful happiness and bleakest hopelessness.

This finding is also entirely in line with the view that implicit motives represent capacities to experience certain types of incentives as particularly rewarding and certain disincentives as particularly aversive. In other words, motives determine how much pleasure or pain a person can experience upon (dis-)incentive contact (cf. Atkinson, 1957; McClelland, 1987; Schultheiss et al., 2005). Recent research has provided strong evidence for this key characteristic of implicit motives by demonstrating that they influence non-conscious instrumental learning and reinforcement (cf. introduction to Study 2) and endocrine changes. For instance, Wirth, Welsh, and Schultheiss (2006) found replicable evidence that in individuals high in implicit power motivation a defeat in a one-on-one contest situation leads to stress axis activation, as reflected in increased cortisol release from the adrenals, whereas a victory leads to decreased cortisol levels. These differences could not be observed in individuals low in power motivation. Notably, dysregulation of the hypothalamic–pituitary–adrenal stress axis is a hallmark of depression, and we therefore speculate that frequent episodes of motivational frustration in the pursuit of "hot" personal goals may contribute to depressive symptoms in part through their potentially corrosive impact on stress axis functioning.

Finally, our results also provide evidence that the implicit motivation system and the explicit goal pursuit system not only are independent (as reflected in the lack of overlap between implicit motive and goal commitment measures), but that they interact to shape individuals' feelings, experiences, and behavior (for related arguments, see Brunstein & Maier, 2005). Our findings suggest that *between-systems synergy* can occur when goal strivings provide opportunity fields for the satisfaction of implicit motivational needs or when implicit motives contribute to goal enactment, particularly if a person is not thinking or trying too hard to succeed.

5.2. Limitations and future directions

Our present research diverges from earlier studies on the interactive effects of implicit motives and explicit goals in one critical regard: we used motive and goals scores that were aggregated across the domains power, achievement, and affiliation–intimacy. We did this based on Brunstein et al.'s (1998) observation that motives in one domain may facilitate goal progress in another. Our findings attest to the robust validity of this assumption, but they also raise the question how and why a given motive can aid, and benefit from, progress with a goal that appears to have no direct thematic link to it (e.g., Why should someone who is motivated to maintain relationships care if they succeed at an achievement goal?). We suggest that light could be shed on this issue by recording and analyzing the "molecular" events that are associated with the pursuit of a given goal (e.g., receiving support from a friend while working on an academic goal) and that may account for the spill-over effects we appear to have exploited with our aggregation strategy. After all, the goals that people set for themselves and describe in goal inventories may be considerably less pure-bred in their actual enactment than they are represented in people's minds and idealized expectations.

Although our findings for measures of affect are entirely consistent with those obtained by Brunstein et al. (1998) in longitudinal research, our research design in both studies was cross-sectional and is open to alternative interpretations of our results. It will therefore be particularly important to demonstrate in longitudinal studies that variations in depressive symptoms are indeed a consequence, rather than a concomitant or precursor, of high or low goal progress in the pursuit of hot goals, as we have argued in this paper. Similarly, longitudinal and perhaps even experimental research designs could be used to ascertain a causal role of high implicit motivation in the intuitive enactment of personal goals and to thereby rule out the possibility that goal progress increases implicit motivation and decreases goal rumination in uncommitted goal strivers.

Moreover, in our assessment of personal goals, we have relied on the idiographic-nomothetic goal assessment approach prevalent in the goal literature and asked our participants to evaluate their current concerns on questionnaire scales related to goal commitment, progress, and rumination. Future research should therefore address whether the findings we obtained with these self-report measures can also be replicated if more specific and behavioral measures of goal pursuit are used. For instance, goal progress could be assessed with goal-attainment scaling techniques, in which participants define at the beginning of a goal pursuit which outcomes could be considered good, acceptable or insufficient progress and later indicate which outcome they did in fact attain (e.g., Kiresuk, Smith, & Cardillo, 1994). This approach affords greater specificity in the definition of

goal progress and helps to control for retrospective biases and adjustments in individuals' judgments of what constitutes good goal progress.

Similarly, our assessment of depressive symptoms was restricted to participants' self-report, which may incur biases such as over- or underreporting of depressive symptoms, and we used a measure (the BDI) that, although still widely used, covers only a subset of the DSM-IV diagnostic criteria and does not assess physical symptoms of depression, such as psychomotor agitation (Nezu, Nezu, McClure, & Zwick, 2002). Thus, future research on the role of implicit motives and explicit goal pursuits in depression would benefit from including updated self-report measures of depression, such as the BDI-II (Beck, Steer, & Brown, 1996), and perhaps complementing them with clinician rating measures, such as the Hamilton Rating Scale for Depression (Hamilton, 1960). More critically, in order to gauge whether the interplay between implicit motives and personal goal pursuits plays a direct role in the onset, duration, or remission of actual depressive episodes, it will be important to conduct prospective longitudinal studies as well as studies in which implicit motivation levels and goal progress rates are assessed in depressed individuals, individuals in remission, and non-depressed control samples. Although a causal involvement of motivationally frustrating goal pursuits in depressive episodes is by no means a foregone conclusion at this point, we are hopeful that the dual-systems approach we have outlined and tested in the present paper may add an important perspective to the understanding of depression and thereby perhaps also pave the way to new or improved therapeutic approaches to this disorder.

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