

Satisfying One's Needs for Competence and Relatedness: Consequent Domain-Specific Well-Being Depends on Strength of Implicit Motives

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Abstract

Considering the effect of implicit motives, the current study examined the link between well-being in important life domains, that is, job and relationship, and the satisfaction of needs as proposed by self-determination theory. Data on domain-specific well-being, satisfaction of needs for competence and relatedness, and the implicit achievement and affiliation motives were assessed from 259 German and Cameroonian participants. The achievement motive moderated the relation between competence and job satisfaction. Furthermore, the affiliation motive moderated the association between relatedness and relationship satisfaction. Satisfaction of the needs for competence and relatedness is linked to higher levels of job and relationship satisfaction, respectively, among individuals with strong implicit motives. Effects were found regardless of participants' culture of origin. Findings indicate that implicit motives can be understood as weighting dispositions that affect how far experiences of competence and relatedness are linked with satisfaction in relevant life domains.

Keywords

job satisfaction, relationship satisfaction, implicit motives, competence, relatedness, culture

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In their seminal self-determination theory (SDT), Deci and Ryan (2000, 2008) propose the existence of three innate basic needs motivating human behavior: autonomy, competence, and relatedness. Focusing on individual differences not in need strength but in need satisfaction, an impressive host of research has shown that higher levels of need satisfaction are reliably related to a variety of indicators of well-being and psychological adjustment. The present study, however, suggests an extension of SDT's perspective on needs by taking individual differences in their strength into account. We argue that individuals with low dispositional need strength will report less well-being when experiencing need satisfaction than individuals with high dispositional need strength. This moderation hypothesis will be tested for the needs for competence and relatedness, which will be assessed in the form of the implicit achievement and affiliation motive, respectively. As needs are assumed to be universal, samples from Germany and Cameroon will be examined.

Individual Differences in Need Satisfaction and Need Strength

SDT uses the concept of needs as the vantage point for its explanation of human motivation. In this view, needs are

seen as innate (as opposed to learned), universal, and psychological (as opposed to physiological drives). Specifically, the following three needs are distinguished: *Autonomy* refers to feeling oneself to be the agent of one's action and experiencing identification with one's actions. *Competence* denotes the ability to skillfully master challenges in one's environment. *Relatedness* represents interpersonal acceptance and closeness (Deci & Ryan, 2000, 2008).

Research has repeatedly shown that satisfaction of these needs is associated with desirable outcomes. For example, Reis, Sheldon, Gable, Roscoe, and Ryan (2000) found day-to-day variation in emotional well-being was attributable to daily need satisfaction. Likewise, these needs explain not only everyday affect but also extraordinarily satisfying events (Sheldon, Elliot, Kim, & Kasser, 2001). The explanatory value of need satisfaction for well-being could also be demonstrated longitudinally (Sheldon & Krieger, 2007).

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Thus, need satisfaction yields effects on well-being and other beneficial outcomes.

So far, the empirical focus of SDT has been on consequences of individual differences in the extent to which basic needs are satisfied or thwarted. Besides, individual differences manifest in the motivational constructs of life goals and (autonomous, controlled, and impersonal) causality orientations, which direct individuals toward environments supportive of need satisfaction and which develop as a function of the satisfaction or thwarting of needs in the past (Deci & Ryan, 2000, 2008). A second focus is on how individuals' social environment, for example, parents and teachers, fosters need satisfaction (Deci, Nezlek, & Sheinman, 1981; Grolnick & Ryan, 1989).

Individual differences in need strength, however, are deliberately not considered in self-determination research (Deci & Ryan, 2000, 2008). Note that SDT does not deny the existence of such differences (Deci & Ryan, 2000); rather, SDT assumes need strength to be less important than the individual's experiences with need satisfaction or thwarting on one hand and the individual's social environment's support in need satisfaction on the other hand.

However, we argue that if there are individual differences in need strength, these differences should reflect the association of need satisfaction and well-being. That is, an individual high in, for example, need for competence should experience more benefit in terms of well-being when the need for competence is satisfied than an individual low in need for competence.

Implicit Motives as Psychological Needs

Apart from their different focus, Ryan and Deci (2000) also raise a methodological problem with the operationalization of need strength by stating that it is very likely "that what is measured in self-reports will not be need strength but will instead reflect the strength or salience of a loosely related motive" (p. 328). We agree with this skepticism toward conscious representations of needs (see McClelland, Koestner, & Weinberger, 1989, on differences between explicit and implicit motives). However, we suggest that need strength can be assessed via projective testing procedures as employed for the measurement of implicit motives.

In the rich research tradition on implicit motives, Picture Story Exercises (PSE; a term coined by McClelland et al., 1989) are used to assess the achievement, affiliation, and power motives. Implicit motives are defined as unconsciously represented, affective preferences for situations that feature specific incentives (e.g., competitive situations); they energize and direct spontaneous action and long-term behavioral trends (McClelland, 1987; McClelland et al., 1989). In this tradition (McClelland, 1987), like in SDT, implicit needs or motive dispositions are considered to represent a decisive component of individuals' personality. Even if those needs are innate and reflect our biological heritage as shaped by

evolutionary forces (Winter, 1996), motives are considered to involve considerable affectively toned learning, particularly in prelingual childhood. Consequently, individuals differ in their motive strength as a function of that learning. In research, differences in need strength are used for predicting various psychological and behavioral outcomes (for a recent overview, see Schultheiss & Brunstein, 2001).

Implicit motives research concentrates on the so-called Big Three: *Power* concerns the desire to have an impact on the emotions and actions of others (Winter, 1973). *Achievement* denotes the concern for successfully competing with an inner or outer standard of excellence (McClelland, 1961). Individuals characterized by a pronounced need for achievement typically seek challenging tasks, compete to do things better, and derive satisfaction from personal mastery (McClelland, 1987). *Affiliation* refers to the need for warm and close interpersonal contact (Heyns, Veroff, & Atkinson, 1958; McAdams, 1980). Individuals with a high need for affiliation seek friendly exchange with other people and are sensitive to signs of rejection (McClelland, 1987). Research has provided substantial evidence that the need for affiliation is a composite of two emotional tendencies toward interpersonal relations (Weinberger, Cotler, & Fishman, 2010), that is, the tendency to avoid loneliness by seeking company of others (affiliation) and the tendency to experience warm mutual exchange in interpersonal relationships (intimacy). Yet, because of a strong thematic and theoretical overlap, these two tendencies are summarized as a single motive. For brevity's sake, we denote this category as need for affiliation throughout the remainder of this article.

Recent research generated many new insights into the role of implicit motives for human behavior and experiences, for example, linking implicit motives with generative concern (Hofer, Busch, Chasiotis, Kärtner, & Campos, 2008), the accessibility of emotional experiences (Woike, McLeod, & Goggin, 2003), and implicit learning (Schultheiss et al., 2005). For the current article, however, studies focusing on the congruence between implicit motives and consciously represented motivational entities (e.g., goals, values) seem to be of particular relevance. Although it is generally found that implicit and explicit motives share little common variance (e.g., Spangler, 1992), it has repeatedly been demonstrated that individuals differ in their alignment of both types of motives. For example, Hofer, Busch, Bond, Kärtner, et al. (2010) demonstrated across cultural groups that higher levels of self-determination, defined as an enduring aspect of personality that reflects being aware of the self's needs and grounding decisions of whether to give way to behavioral impulses relating to this awareness (Sheldon & Deci, 1993), were associated with congruence of implicit achievement motives and achievement-oriented goals, which in turn predicted individuals' goals success and well-being (see also Thrash & Elliot, 2002). Such beneficial effects of motive-congruent conscious strivings for well-being have also been shown in the motivational domains of affiliation and power:

Implicit motives moderate the well-established positive link between commitments to goals, successful realization of goals, and well-being (e.g., Brunstein, Schultheiss, & Grässmann, 1998; Hofer, Busch, Bond, Li, & Law, 2010). Pursuance of goals that are aligned to one's implicit motives is related to enhanced levels of well-being.

As can be seen from the definitions of implicit motive dispositions, the implicit motives of affiliation and achievement are very similar to the basic needs for relatedness and competence proposed by SDT, as they share a focus on positive interpersonal exchange and efficacy in one's environment, respectively. Indeed, these parallels have previously been observed (Hofer, Busch, & Kiessling, 2008; Schüler, Job, Fröhlich, & Brandstätter, 2008). For example, capitalizing on the analogies between the need for competence and the implicit achievement motive, Schüler, Sheldon, and Fröhlich (2010) found the relation of satisfaction of the need for competence and flow experience to be moderated by the implicit achievement motive.

The Present Research

For the purposes of the present study, the implicit achievement and affiliation motives are used to assess individual differences in strength of the needs for competence and relatedness, respectively. This way we can test the hypothesis that the association between need satisfaction and well-being is moderated by need strength.

We consider well-being in distinct life domains. Research has shown that although need satisfaction is generally beneficial for well-being, the need for relatedness plays a particularly important role in romantic partnerships. For example, satisfaction of the need for relatedness most strongly predicted attachment quality toward romantic partners and other interaction partners (LaGuardia, Ryan, Couchman, & Deci, 2000). Similar findings were obtained by Patrick, Knee, Canevello, and Lonsbary (2007), who also demonstrated that relatedness need satisfaction was the single best predictor of relationship commitment and perceived conflicts in the partnership. Thus, we test whether strength of the implicit affiliation motive moderates the association between relatedness need satisfaction and well-being in terms of relationship satisfaction.

Concerning satisfaction of the need for competence, the work context has been shown to be a setting of great importance. For U.S. and German students, for example, perceived competence was strongly associated with well-being measures (Levesque, Zuehlke, Stanek, & Ryan, 2004). Moreover, Deci et al. (2001) demonstrated strong associations between the satisfaction of the need for competence and job engagement and self-esteem.

Deci et al. (2001) is of particular interest to our study because it lends cross-cultural confirmation of the importance of need satisfaction for well-being by replicating results found in U.S. employees with Bulgarian employees. SDT

proposes the needs for competence and relatedness to be universal (e.g., Deci & Ryan, 2000; see Sheldon et al., 2001, for empirical support for this assumption). For implicit motives, too, universal validity is assumed and has been empirically demonstrated (see Hofer, 2010, for an overview of cross-cultural studies on implicit motives). Thus, we intend to examine the interplay of implicit motives of affiliation and achievement, satisfaction of the needs for relatedness and competence, and relationship and job satisfaction in samples from Germany and Cameroon to make results more generalizable.

To summarize, the literature indicates that, for example, measurements of implicit motives (need strength) and goal attributes (e.g., goal importance and progress) show no substantial overlap (e.g., Schultheiss, Jones, Davis, & Kley, 2008). Thus, we hypothesize that implicit need strength and self-reported need satisfaction (as well as well-being) do not significantly correlate with each other. Need strength per se does not result in need satisfaction. Rather, our hypothesis is that implicit motive strength is the criterion for the connection between need satisfaction and well-being. Self-reported need satisfaction is assumed to be linked to well-being, particularly among individuals who are characterized by a strong implicit motive. Specifically, the strength of the implicit affiliation motive moderates the association between satisfaction of the need for relatedness and relationship satisfaction. Analogously, the strength of the implicit achievement motive moderates the association between satisfaction of the need for competence and job satisfaction. Finally, the moderating effect of implicit motives can be identified in the German and Cameroonian samples.

As the present study focuses on structure-level analyses (associations between variables within cultural groups) rather than level-oriented analyses (strength of variables across cultural groups; see Van de Vijver & Leung, 1997), no mean differences hypotheses will be tested. For the same reason, no in-depth bias analyses in the measurements of the study are required. However, reliability of measures will be scrutinized within each of the cultural samples to guarantee meaningful findings.

Method

Sample

Selection of cultural groups. For the present study, samples from Germany and Cameroon were selected. To test the cross-cultural equivalence of relations among variables, data need to be assessed from cultural samples representing a wide range of ecological contexts as well as socio-cultural orientations such as norms, beliefs, and values (Van de Vijver & Leung, 1997). Research has provided conclusive evidence that German and Cameroonian participants clearly differ from each other in their value orientations (e.g., Hofer, Chasiotis, Friedlmeier, Busch, & Campos, 2005) that show

substantial overlap with other cultural markers at the national and individual levels (e.g., Triandis, 1996): Cameroonians put more stress on values that represent a concern for harmony in interpersonal relationships by emphasizing self-restriction, preservation of customs, and protection of stability than do Germans; Germans show more commitment to values that reflect a striving for autonomy and self-direction than do Cameroonians (see also Hofer, Busch, Bond, Campos, et al., 2010).

Participants. In total, 259 participants were recruited. One hundred thirty-three of these were from Germany (59.4% females), 126 from Cameroon (49.2% females). Distribution of gender did not differ significantly between both cultural samples. Participants were between 21 and 61 years of age ($M = 33.90$, $SD = 8.41$). Female and male participants as well as German and Cameroonian participants did not differ in age. Overall, 228 participants reported that they had a steady partner (Germany: $n = 119$), and 31 participants were currently not in a steady relationship. Although 34 participants were not employed at the time the data were collected (Germany: $n = 13$), 225 men and women reported that they were employed. As it is difficult to label types of employment across highly divergent cultural contexts, only two broad occupational categories were used: *routine and trade* and *service occupations*. Across cultural samples, 57.8% of the occupations categorized as routine and trade (e.g., worker, secretary, farmer; Germany: $n = 74$; Cameroon: $n = 76$) and 42.2% were categorized as service occupations (e.g., teacher, accountant, lawyer). Cultural samples were balanced with respect to partnership and occupational status.

Procedure. Participants were contacted with the help of local research assistants. Participation was voluntary and participants were guaranteed that all information would be treated confidentially and anonymously. All participants received monetary compensation. Measurements were administered to participants individually by local research assistants. Whereas in Germany data collection was conducted on the premises of the university, Cameroonian participants were visited at their homes. It should be noted that data in Cameroon were collected in the Anglophone North-West Province. Thus, sampling of Cameroonian participants was restricted to ethnic Grassfield Bantus whose cultural background (e.g., socialization strategies and norms) is described by Nsamenang and Lamb (1995; see also Keller, 2007; Mbaku, 2005).

As in the Anglophone North-West Province, English is the official language and only very few people are able to read or write in the colloquial languages, English was used in data collection in Cameroon. English versions of all measurements were available. In Germany, instruments were administered in German. A German language version of the Relationship Assessment Scale (RAS; Hendrick, 1988; Sander & Böcker, 1993) was available, and the Basic Need Satisfaction in Life Scale (Gagné, 2003) and the relevant items of the Job Satisfaction Survey (JSS; Spector, 1997)

were translated from the original English version into German by a bilingual research assistant. The quality of the translated material was ensured by back-translation and retranslation and checking of any problems apparent in the first translation.

Measurements

First, participants provided basic sociodemographic information. Then, constructs were assessed in the following order: implicit motives (affiliation and achievement); relationship and job satisfaction, respectively; and satisfaction of the needs for relatedness and competence.

Implicit motives. Implicit motives are generally measured through fantasy-based instruments, usually PSE (McClelland et al., 1989) that are based on the classical thematic apperception test (Morgan & Murray, 1935). Using an instruction recommended by Smith, Feld, and Franz (1992), participants were asked to imagine what is going on in the portrayed situation and write a story about the people shown in the picture. After being shown each picture card for 30 s, the participants were given 5 min to write a story based on the portrayal. In the present study, need for affiliation (n Affiliation) and need for achievement (n Achievement) were assessed by participants' written stories about five picture cues: *trapeze artists*, *night club scene*, *couple by a river*, *four men seated at a table*, and *boxer* (for reprints, see McClelland, 1975; McClelland & Steele, 1972; Smith, 1992). Following guidelines set forth by Smith et al. (1992; see also Schultheiss & Brunstein, 2001), the picture set was relatively balanced with respect to the stimulus pull for n Achievement and n Affiliation. Three picture cards (trapeze artists, four men seated at a table, and boxer) had a high pull for achievement imagery and two cards (night club scene and couple by a river) had a high pull for affiliation imagery. Furthermore, it should be noted that all picture cards elicited motive imagery indicative of n Achievement and n Affiliation. For example, trapeze artists showed a high pull for achievement and a medium pull for affiliation.

The content of stories was coded for the implicit motives of affiliation and achievement according to the well-established manual for scoring motive imagery in running text developed by Winter (1994; see also for details on scoring rules). In previous research, this manual has proven to adequately assess implicit motives in various cultural groups (e.g., Hofer, Busch, Bond, Kärtner, et al., 2010; Hofer et al., 2005).

As stated above, the affiliation motive, defined as a concern for a warm, close relationship with others (Heyns et al., 1958; McAdams, 1980), involves affiliation- and intimacy-oriented motivational tendencies. Winter's (1994) scoring system combines both components into one conjoint imagery category because of the theoretical and empirical overlap between the two constructs. Thus, any response pointing to friendly relationships as expressed by positive feelings towards others, regret about the disruption of a relationship,

friendly companionate activities, or friendly nurturant acts is scored for *n* Affiliation (Winter, 1994).

Again as stated previously, the achievement motive is defined as a disposition to strive for success in competition with a standard of excellence (McClelland, 1961). According to Winter (1994), *n* Achievement is scored for any indication of a standard of excellence, usually expressed in descriptions positively evaluating performances and/or successful realization of goals. Further indicators of *n* Achievement are references to unique accomplishments, successful competition with others, and disappointment about failure.

All picture stories were coded by three well-trained and experienced German assistants who all achieved percentage agreements of 85% or better with training material prescored by experts (Winter, 1994). Initially, 10 sets of picture stories (i.e., 5 German and 5 Cameroonian) were coded by all three assistants. Percentage agreement among raters was .87 for *n* Affiliation and .90 for *n* Achievement. Since indices of interrater reliability were sufficient, each assistant independently coded a different set of the remaining picture stories. However, scoring difficulties were resolved by discussions in weekly meetings.

For the 259 participants, the total number of words ranged from 128 to 1,144 ($M = 442$, $SD = 166$). The number of motive imageries totaled across all stories ranged from 0 to 17 ($M = 4.04$, $SD = 2.64$) for affiliation and from 0 to 11 ($M = 2.51$, $SD = 1.88$) for achievement. As the numbers of motive images for affiliation ($r = .40$, $p < .001$) and achievement ($r = .37$, $p < .001$) were significantly related to protocol length, the score for the strength of implicit motives is expressed as motive images per 1,000 words (see Winter, 1994).¹

Relationship satisfaction. The RAS (Hendrick, 1988; German version: Sander & Böcker, 1993) was used to assess relationship satisfaction, that is, one's subjective evaluation of a close relationship. The RAS is widely used in research on satisfaction in different types of relationships (e.g., marriage, partner relationships; see Hendrick, Dicke, & Hendrick, 1998). The seven items (e.g., "In general, how satisfied are you with your relationship?" and "How many problems are there in your relationship?" reversed coded) are evaluated on a 5-point Likert scale ranging from 1 to 5 with various verbal anchors depending on how each item is phrased (e.g., in terms of agreement, frequency). Data on relationship satisfaction was available from 228 participants. Cronbach alphas were .92 for the German sample and .89 for the Cameroonian sample.

Job satisfaction. The 36 items of the JSS (Spector, 1997) assess data on nine facets of job satisfaction (e.g., promotion opportunities, pay, operating procedures, communication). Each facet is assessed by four items that are evaluated on a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*). As we were not focusing on specific organizational aspects of participants' work environment (e.g., satisfaction with pay or promotion) but rather on contentment with the tasks participants are confronted with at their job sites, only

the four items of the scale Nature of Work were used in the study (e.g., "I like doing the things I do at work" and "I sometimes feel my job is meaningless" reversed coded). Cronbach's alphas were .76 for the German sample and .77 for the Cameroonian sample. In total, 225 participants reported on their job satisfaction.

Need satisfaction. In SDT a family of self-report scales, that is, Basic Need Satisfaction in Life Scale (Gagné, 2003), is typically used to assess data on satisfaction of the needs for autonomy, competence, and relatedness (e.g., Kashdan, Julian, Merritt, & Uswatte, 2006). As need satisfaction scales are typically found to be highly intercorrelated, they can be averaged to form an overall index of intrinsic need satisfaction (see, e.g., Deci et al., 2001). However, scales can be used separately to test specific hypotheses. Using only the relatedness and competence scales, the latter approach was followed in the present study.

Each of the eight items measuring relatedness (e.g., "People in my life care about me") and six items measuring competence (e.g., "I have been able to learn interesting new skills recently"), respectively, is evaluated on a Likert-scale ranging from 1 (*not true at all*) to 7 (*definitely true*). Cronbach's alphas were .74 (German sample) and .70 (Cameroonian sample) for relatedness ($n = 259$), and .68 (German sample) and .60 (Cameroonian sample) for competence ($n = 258$).

The present study had a structure-oriented focus, that is, examining relations among psychological constructs across cultural groups rather than emphasizing an examination of mean differences in measurements between cultural samples. Thus, equivalence of measurements (bias) across cultural samples was not examined in detail by, for example, confirmatory factor analysis. However, internal consistencies indicate that sets of items can be treated as measuring single latent variables across cultural samples under investigation. There were no negative item-whole correlations for any of the scales in any of the two cultural groups (item-total correlations $> .24$). Furthermore, exploratory factor analyses conducted separately for cultural groups showed without exception that loadings on the respective factor were sufficiently high (factor loadings $> .32$), thus indicating significance of scales in samples under consideration. Finally, picture cues used for the assessment of implicit motives have been proven to represent adequate stimulus material in various cultural groups (including those recruited in the present study).

Results

The presentation of results is divided into two main sections. In the first part, general statistics of the measurements and correlations among variables within both cultural samples are given. Additionally, effects of participants' gender, age, and partnership and job status on the dependent variables, that is, relationship and job satisfaction, are examined, enabling us to control potential effects in subsequent regression analyses.

Table 1. Correlations Among Measurements and Descriptive Statistics

	1	2	3	4	5	6	GER		CAM	
							M	(SD)	M	(SD)
1. <i>n</i> Affiliation	—	.09	-.04	.09	.11	.02	11.24	(5.98)	7.62	(5.00)
2. <i>n</i> Achievement	.09	—	.01	-.01	-.01	-.04	5.68	(4.61)	6.18	(4.14)
3. Relationship satisfaction	.01	.02	—	.06	.23*	.24*	3.44	(0.88)	3.70	(0.73)
4. Job satisfaction	.02	-.01	.20*	—	.31**	.44***	4.36	(0.97)	4.56	(1.05)
5. Relatedness	.02	.21*	.23*	.27**	—	.60***	5.17	(0.82)	4.92	(0.84)
6. Competence	.11	.10	.08	.40***	.52***	—	4.65	(0.97)	4.88	(0.86)

Statistics for the German (GER) sample are given below the diagonal and for the Cameroonian (CAM) sample above the diagonal, respectively. *n* Affiliation = need for affiliation; *n* Achievement = need for achievement.

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

In the second part, we examine the core issue of the our study, that is, the relation between need satisfaction, implicit motives, and well-being in the domains of partnership and work. In this context, it will be tested whether participants' culture of origin affects the relation between psychological constructs.

In Table 1, descriptive statistics of measurements as well as correlations among psychological constructs are given for both the German and Cameroonian samples.

As typically reported in literature, satisfaction of the needs for competence and relatedness is significantly intercorrelated. Also, satisfaction of these needs is positively correlated with measures of well-being in life domains: Higher levels of competence and relatedness are associated with higher levels of job and relationship satisfaction, respectively, in both cultural samples. Furthermore, relatedness was positively correlated with job satisfaction in both samples. Competence was significantly correlated with relationship satisfaction only in the Cameroonian subsample. Job and relationship satisfaction were positively correlated in the German sample but uncorrelated in the Cameroonian sample. Finally, the implicit achievement and affiliation motives were neither intercorrelated nor did they show significant correlations with need satisfaction or domain-specific well-being, except for a positive link between *n* Achievement and relatedness within the German sample.

An examination of the effects of sociodemographic characteristics on measures of relationship and job satisfaction showed that the younger German participants were, the higher they evaluated their relationship satisfaction ($r = -.35$, $p < .01$). In the Cameroonian sample, males reported higher relationship than females ($r = -.23$, $p < .05$). A similar non-significant trend was found in the German sample ($r = -.14$, *ns*). Job status was uncorrelated with relationship satisfaction. Thus, in subsequent analyses on relationship satisfaction, age and gender will be controlled.

With respect to job satisfaction, it was found that German women reported higher job satisfaction than did men ($r = .18$, $p < .05$). Furthermore, there was a trend in both cultural samples that participants assigned to the category service

occupation reported higher job satisfaction than did individuals assigned to the category routine and trade ($r_s = .15$ to $.17$, $p_s < .10$). In contrast, age and partnership status were not associated with job satisfaction. Thus, in further analyses on job satisfaction, gender and job status are controlled.

To test the study's main hypotheses, two hierarchical regression analyses (simultaneous entry method) were conducted with relationship and job satisfaction, respectively, as the dependent variable. The regression analysis on relationship satisfaction ($n = 228$) is presented first. Relationship satisfaction was first regressed on participants' age and gender (Block 1). In Block 2, relatedness and *n* Affiliation were entered as predictors into the regression. Predictor variables were centered within cultural groups. In Block 3, the interaction coefficient (product term: relatedness \times *n* Affiliation) was entered into the model.

The results for the model on relationship satisfaction are presented in Table 2. As shown in the results for Block 1, age of participants was negatively related to perceived relationship satisfaction. Also, gender accounted for a significant portion of the variance in relationship satisfaction, such that males reported a higher level of relationship satisfaction. Additional variance in relationship satisfaction was explained by a main effect of relatedness in Block 2 ($F_{change} = 4.29$, $R^2_{change} = .03$, $p < .05$). Finally, additional variance in relationship satisfaction was explained after including coefficients of the interaction of relatedness and *n* Affiliation in Block 3 ($F_{change} = 4.90$, $R^2_{change} = .02$, $p < .05$).

The nature of significant interaction term ($f^2 = .02$) was clarified by calculating relationship satisfaction scores at the mean value, and at values 1 *SD* below and above the mean for predictor variables in the significant interaction term (Cohen, Cohen, West, & Aiken, 2003). Simple slope tests were performed after partialing out additional covariates from all variables involved in the interaction analysis (O'Connor, 1998).

Simple slope tests indicated that the slopes corresponding to a medium ($t_{224} = 2.88$, $p < .01$) and a high degree of *n* Affiliation ($t_{224} = 3.49$, $p < .01$) differed significantly from zero. Thus, only among participants characterized by a pronounced

Table 2. Relationship Satisfaction: Interaction Effects of Relatedness and *n* Affiliation

Outcome: Relationship satisfaction			
Predictor variables	Block 1	Block 2	Block 3
	β	β	β
Age	-.28***	-.24***	-.24***
Gender	-.22**	-.24***	-.25***
Relatedness		.18**	.17**
<i>n</i> Affiliation		.02	.04
Relatedness \times <i>n</i> Affiliation			.14*
R^2 (F value)	.11*** (13.88)	.14*** (9.29)	.16*** (8.54)

n Affiliation = need for affiliation.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Job Satisfaction: Interaction Effects of Competence and *n* Achievement

Outcome: Job satisfaction			
Predictor variables	Block 1	Block 2	Block 3
	β	β	β
Gender	.12†	.08	.09
Job status	.16*	.09	.10†
Competence		.39***	.40***
<i>n</i> Achievement		-.02	-.03
Competence \times <i>n</i> Achievement			.13*
R^2 (F value)	.04* (4.60)	.18*** (12.46)	.20*** (10.96)

n Achievement = need for achievement.
† $p < .10$. * $p < .05$. *** $p < .001$.

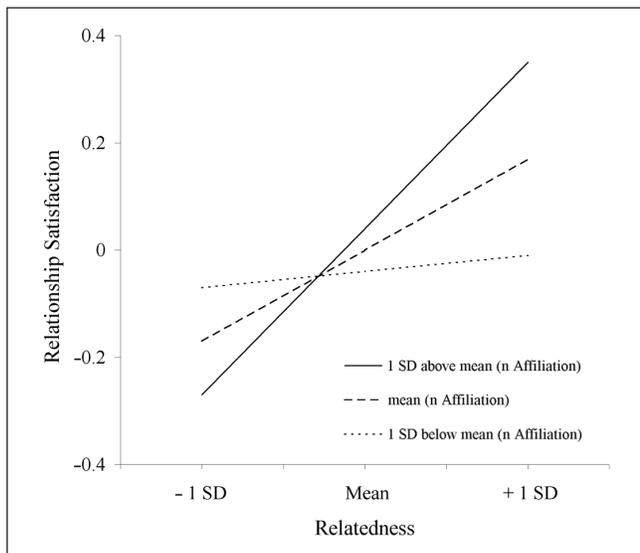


Figure 1. Effects of relatedness and need for affiliation on relationship satisfaction

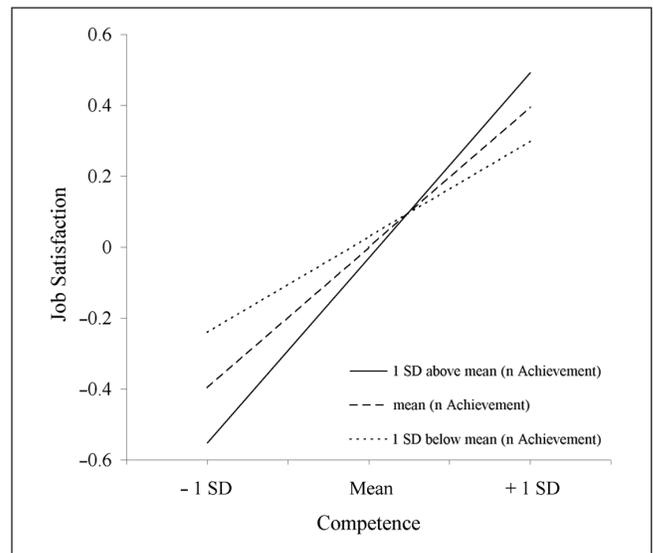


Figure 2. Effects of competence and need for achievement on job satisfaction

implicit affiliation motive was satisfaction of the need for relatedness associated with enhanced relationship satisfaction (see Figure 1).

Next, the regression model on job satisfaction was examined. Because of missing data on competence, only 224 participants were included in the analyses. After job satisfaction was controlled for, gender and job status in Block 1, competence, and *n* Achievement were included as predictors (Block 2). Finally, the interaction coefficient (Competence \times *n* Achievement) was entered in Block 3. Again, predictors were centered within cultural groups.

As shown in Table 3, gender and job status explained variance in job satisfaction. However, additional variance in job satisfaction was explained by a main effect of competence in Block 2 ($F_{change} = 19.55, R^2_{change} = .14, p < .001$). Finally, further variance in job satisfaction was explained by

the interaction coefficients in Block 3 ($F_{change} = 4.21, R^2_{change} = .02, p < .05$).

Again, job satisfaction scores were calculated at the mean value, and at values 1 *SD* below and above the mean for predictor variables in the significant interaction term ($f^2 = .02$) and simple slope tests were performed, with additional covariates partialled out from all variables involved in the interaction analysis. Tests indicated that slopes linked to a low ($t_{220} = 3.05, p < .01$), medium ($t_{220} = 6.38, p < .001$), and high ($t_{220} = 5.78, p < .001$) *n* Achievement differed significantly from zero (see Figure 2).

Thus, satisfaction of the need for competence is generally related to enhanced job satisfaction regardless of participants' strength of *n* Achievement. However, satisfaction of the need for competence and job satisfaction were more

closely associated among participants with medium and high strengths of *n* Achievement.

In the following, we examined whether results on the associations between implicit affiliation and achievement motives, satisfaction of the needs for relatedness and competence, and well-being in the domains of relationship and job obtained by single-regression equations (total sample) held true regardless of individuals' cultural background. Such an examination seems to be indispensable because it is possible that strength or direction of the relation between variables vary from one (cultural) group to another. Therefore, multi-group path analyses with manifest variables were conducted to test equality of regression coefficients across the cultural groups by applying structural equation modeling (SEM) with maximum likelihood estimation.

In the model on relationship satisfaction, relatedness, *n* Affiliation, and the interaction term were treated as exogenous variables, whereas relationship satisfaction, controlling for the effects of age and gender, was treated as endogenous variable. After having placed equality constraints on regression coefficients across groups and having left intercepts free to vary, the constrained model gained 3 *df* (20 data points minus 17 unknown parameters). Multigroup analyses indicated that the specified structural weights model had an adequate fit within the two cultural groups (e.g., $\chi^2/df = .24$, adjusted goodness of fit [AGFI] = .99, root mean square error of approximation [RMSEA] < .001) and did not show an impairment of fit compared to an unconstrained model ($\Delta\chi^2 = .70$, $\Delta df = 3$, $p = .87$). Analyses further demonstrated that relatedness (critical ratio = 2.73, $p < .01$, $\beta_s = .16$ and $.19$ for the German and Cameroonian sample, respectively) and the interaction term (critical ratio = 2.06, $p < .05$, $\beta_s = .14$ and $.12$ for the German and Cameroonian sample, respectively) significantly related to relationship satisfaction within each cultural group. The implicit affiliation motive did not relate to relationship satisfaction (critical ratio = .41).

A similar model was specified for job satisfaction: competence, *n* Achievement, and the interaction term were treated as exogenous variables, whereas job satisfaction, controlling for effects of gender and job status, was treated as an endogenous variable. As indicated by the fit indices (e.g., $\chi^2/df = .74$, AGFI = .97, RMSEA < .001), the structural weights model (all paths set equal across the cultural groups) approximated the data sufficiently well. Moreover, the structural weights model did not fit worse than the unconstrained model ($\Delta\chi^2 = 2.21$, $\Delta df = 3$, $p = .53$). Finally, competence (critical ratio = 6.50, $p < .001$, $\beta_s = .42$ and $.37$ for the German and Cameroonian sample, respectively) and the interaction term (critical ratio = 2.34, $p < .05$, $\beta_s = .17$ and $.11$ for the German and Cameroonian sample, respectively) significantly related to job satisfaction. The implicit achievement motive did not relate to job satisfaction (critical ratio = $-.77$).

To conclude, SEM analyses indicated that the relations between need satisfaction (relatedness and competence),

implicit motives (*n* Affiliation and *n* Achievement), and relationship and job satisfaction, respectively, hold across cultural groups. That is, the association between satisfaction of the need for relatedness and competence, on one hand, and well-being as indicated by relationship and job satisfaction, on the other, is moderated by individual strength of the implicit affiliation and achievement motives, respectively. This moderation effect can be found in both German and Cameroonian adults.

A number of additional analyses were conducted to examine the validity of our findings. In a first set of analyses we examined whether *n* Affiliation moderated the relation between competence and job satisfaction and whether *n* Achievement moderated the relation between relatedness and relationship satisfaction. In neither analysis could a significant moderation effect be verified. As the distribution of implicit motive measurements and job satisfaction slightly deviated from normality, analyses were rerun with transformed variables. However, findings did not differ from those reported here.

Discussion

The present study aimed at demonstrating that individual differences in need strength, which had been neglected by SDT research, do affect need satisfaction. Indeed, results support this general moderation assumption for two needs in two cultural groups: The implicit affiliation motive served as a moderator for the association between satisfaction of the need for relatedness and relationship satisfaction. Analogously, the implicit achievement motive served as a moderator for the association between satisfaction of the need for competence and job satisfaction. Thus, people high in implicit achievement and affiliation motives benefit more in terms of job and partnership satisfaction, respectively, when their needs for competence and relatedness are satisfied. However, they also suffer particular losses in terms of well-being when their need is not satisfied. These small (according to Cohen et al.'s, 2003, guidelines for interpreting interaction effect sizes) but significant moderation effects were identified in German as well as Cameroonian adults.

Thus, the present study contributes to a recent body of research highlighting the importance of individual differences in need strength, which Vallerand (2000) called for when suggesting that differences in need strength might yield differences in motivational processes. However, first attempts at demonstrating variance in outcomes depending on need strength relied on self-report measures of needs (e.g., Richer, Blanchard, & Vallerand, 2002). Although Ryan and Deci (2000) have argued that explicit measures are unable to tap needs as defined by SDT, only very recently has need strength been assessed in terms of implicit motives to test whether individual differences in needs moderate effects of need satisfaction: The implicit achievement motive was found to moderate the relation between satisfaction of

the need for competence and subsequent flow experience (Schüler et al., 2010).

The present study differs from and thus complements the findings by Schüler et al. (2010) in several respects: First, we demonstrated a moderating effect of implicit motives for two need domains: competence and relatedness. Thus, we could substantiate the moderation effect of need strength across need domains (see below for a discussion of the need for autonomy, however). Second, on a methodological level, we employed the classical PSE measure of implicit motives instead of the more recent semiprojective Multi-Motive Grid (Sokolowski, Schmalt, Langens, & Puca, 2000). Thus, the moderation effect of need strength could be verified with a classical measure of implicit motives. Third, the present research was conducted with adult samples from two cultural backgrounds, that is, Germany and Cameroon. Thus, results indicate that we can generalize the moderation effect of need strength across cultural groups. In sum, the present study makes a new and significant contribution to research on consequences of need strength in the context of SDT.

As stated previously, individual differences in need strength could be demonstrated to moderate the associations of satisfaction of the needs for relatedness and competence with relationship and job satisfaction, respectively. Individual differences in need strength were measured in terms of the implicit affiliation and achievement motives. Unfortunately, however, this approach does not allow an examination of the need for autonomy as highlighted in SDT. There is no counterpart of the need for autonomy in the implicit motive research tradition: Although autonomy denotes agency of one's own behavior and independence from outer forces, the third of the Big Three implicit motives, that is, the implicit power motive, denotes the desire for having an influence on others. Thus, unlike the other two needs and motive domains, there is no theoretical overlap in construct definition. In fact, SDT and implicit motive research make different predictions about power: SDT considers power to be detrimental to well-being because its pursuance distracts from satisfying the psychological needs of autonomy, competence, and relatedness (Ryan, Huta, & Deci, 2008). Implicit motive research, in contrast, considers power to be beneficial to well-being when individuals manage to align their power goals with their implicit power motive (Hofer, Busch, Bond, Li, et al., 2010). Thus, the question of how to assess individual differences in the strength of the need for autonomy is implicitly an open one and should be addressed in future research.

Based on the results presented here for the needs for relatedness and competence, we argue that SDT and implicit motive research fruitfully complement each other. Indeed, both SDT and implicit motive research postulate relatedness/affiliation and competence/achievement to be universal; that is, every human being is assumed to possess this desire to some extent. Despite an evolutionary readiness to develop these needs and motives (see, e.g., MacDonald, 1991), experiences made early in life might nevertheless shape the formation

and thus the strength of the need or motive. That is, differences in children's experiences with certain situations (e.g., loneliness, competition with some standard of excellence) might lead to differences in affective propensity to engage in and derive pleasure from these kinds of situation (McClelland et al., 1989). Thus, individual differences in need strength should affect well-being that is derived by need satisfaction. In other words, individuals differ in their inclination to certain motives and hence benefit differently from satisfying them (see Hofer, Busch, & Kiessling, 2008).

In the present study, such moderating effects were found for the satisfaction of the needs for competence and relatedness. The more pronounced these needs, the more closely their satisfaction is associated with well-being in the corresponding life domains. Thus, results support the notion that core elements of personality (e.g., implicit motives) play a decisive role in the transformation of need satisfaction to well-being.

However, some limitations of the present study as well as unsolved problems should be noted. For example, the cross-sectional design does not allow any causal interpretation of findings. Temporal sequence of events, which would be desirable to unequivocally establish moderation effects (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001), cannot be determined with absolute certainty in cross-sectional studies. That is, although the development of need strength can safely be assumed to precede need satisfaction and life-domain-specific well-being, the two latter constructs might be more difficult to disentangle. Longitudinal or experimental research might be more informative in this respect.

Furthermore, data were collected in two cultural groups. Although such an approach increases the generalizability of results, it can only be considered a first step toward the inspection of universal patterns of associations among variables. Attempts at replication in more than two cultural settings would thus be a reasonable research endeavor. Such future research endeavors might also aim to implement cross-culturally applicable measurements for the data assessment. Even if all scales showed a reasonable Cronbach's alpha in the present study, the six-item Competence scale just reached the acceptable value of .6 among Cameroonian participants (Nunnally, 1978).

Finally, strength of implicit motives and satisfaction of the needs for relatedness and competence were conceptually related to well-being in close relationships and job. Even if the contexts of partnership and work represent important life domains and have been shown to be of great importance for perceived relatedness and competence, respectively (Deci et al., 2001; LaGuardia et al., 2000), further areas of life seem to be relevant for satisfaction of basic needs. For example, experiences of relatedness might be linked to relationships with friends, family, and colleagues, and competence can be affected by leisure activities (e.g., sports activities). Thus, future studies might include additional domain-specific and global measures to scrutinize the relation between need strength, need satisfaction, and well-being in more detail.

Despite these limitations, the present study significantly contributes to the field of individual differences by showing that personality in terms of implicit motives affects the associations between need satisfaction and well-being. This general moderation assumption could be verified for the two life domains of job and relationship satisfaction, and in two cultural contexts, German and Cameroonian.

Although these findings indicate that a conjoint consideration of need satisfaction and need strength significantly contributes to predicting individuals' domain-specific well-being, an important question needs to be addressed: How far does the term *psychological need*, which has long been used in the tradition of research on implicit motives but is also employed in SDT, really tap the same phenomenon? Deci and Ryan (2000) take a skeptical view toward the congruence of needs as defined in SDT and implicit motives typically assessed by use of PSE. Above all, they argue that measures of implicit motives are likely to confound introjected motives with identified or integrated motives.

This criticism, however, was made on conceptual and not empirical grounds. Empirical studies would be needed to make a conclusive statement on how equivalent SDT needs and implicit motives are. However, to address this question empirically is far beyond the scope of the present article. Rather, we view the present findings and those reported by Hofer, Busch, and Kiessling (2008) as well as Schüler et al. (2010) to be tentative evidence suggesting there is indeed conceptual overlap between the two approaches to needs.

Unfortunately, there is little research on the development of implicit motives (particularly for the affiliation motive). Such research might be helpful in determining whether implicit motives remain rooted in the self throughout their further development or whether social environment somehow moves them away from their basic need, whether implicit motive strength develops in response to their need being thwarted by the social environment or by the repeated possibility of expressing one's need.

In any case, we think the way motive categories are specified in the commonly used motive scoring manuals (e.g., Winter, 1994) is too well defined to run the risk of scoring any given motive that is scored being based in an entirely different need. For example, the affiliation motive is only scored in incidences that refer to warm and friendly interpersonal activities. Whenever interpersonal relationships are established for the sake of some other purpose, that is, affiliation is instrumental in nature, it will not be scored.

Thus, we think that the confounding of introjected and identified motive aspects is, if at all, only minimal. Therefore, despite unsolved issues regarding the conceptualization of needs, the present results are hopefully helpful in directing research attention toward differences in need strength in the context of SDT and thus combine the strengths of two seminal research traditions, namely, SDT and implicit motives research.

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Note

1. Inspecting total word count of fantasy stories indicated that the protocol length of two participants fell below the threshold (30 words per story) required for scoring motives (Smith, Fed, & Franz, 1992). Rerunning analyses after dropping these two participants' data did not alter any of the findings reported in the text.

References

- 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*, 494-508.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. Mahwah, NJ: Erlbaum.
- Deci, E. L., Nezlek, J., & Sheinman, L. (1981). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology, 40*, 1-10.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory on human motivation, development, and health. *Canadian Psychology, 49*, 182-185.
- Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Bloc country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin, 27*, 930-942.
- Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion, 27*, 199-223.
- Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in schools. *Journal of Educational Psychology, 81*, 143-154.
- Hendrick, S. S. (1988). A generic measure of relationship satisfaction. *Journal of Marriage and the Family, 50*, 93-98.
- Hendrick, S. S., Dicke, A., & Hendrick, C. (1998). The Relationship Assessment Scale. *Journal of Social and Personal Relationships, 15*, 137-142.
- Heyns, R. W., Veroff, J., & Atkinson, J. W. (1958). A scoring manual for the affiliation motive. In J. W. Atkinson (Ed.), *Motives in fantasy, action, and society* (pp. 205-218). Princeton, NJ: Van Nostrand.

- Hofer, J. (2010). Research on implicit motives across cultures. In O. C. Schultheiss & J. C. Brunstein (Eds.), *Implicit motives* (pp. 433-466). New York, NY: Oxford University Press.
- Hofer, J., Busch, H., Bond, M. H., Campos, D., Li, M., & Law, R. (2010). The implicit power motive and sociosexuality in men and women: Pancultural effects of responsibility. *Journal of Personality and Social Psychology, 99*, 380-394.
- Hofer, J., Busch, H., Bond, M. H., Kärtner, J., Kiessling, F., & Law, R. (2010). Is self-determined functioning a universal prerequisite for motive-goal congruence? Examining the domain of achievement in three cultures. *Journal of Personality, 78*, 747-779.
- Hofer, J., Busch, H., Bond, M. H., Li, M., & Law, R. (2010). Effects of motive-goal congruence on well-being in the power domain: Considering goals and values in a German and two Chinese samples. *Journal of Research in Personality, 44*, 610-620.
- Hofer, J., Busch, H., Chasiotis, A., Kärtner, J., & Campos, D. (2008). Concern for generativity and its relation to implicit pro-social power motivation, generative goals, and satisfaction with life: A cross-cultural investigation. *Journal of Personality, 76*, 1-30.
- Hofer, J., Busch, H., & Kiessling, F. (2008). Individual pathways to life satisfaction: The significance of traits and motives. *Journal of Happiness Studies, 9*, 503-520.
- Hofer, J., Chasiotis, A., Friedlmeier, W., Busch, H., & Campos, D. (2005). The measurement of implicit motives in three cultures: Power and affiliation in Cameroon, Costa Rica, and Germany. *Journal of Cross-Cultural Psychology, 36*, 689-716.
- Kashdan, T. B., Julian, T., Merritt, K., & Uswatte, G. (2006). Social anxiety and posttraumatic stress in combat veterans: Relations to well-being and character strengths. *Behavior Research and Therapy, 44*, 561-583.
- Keller, H. (2007). *Cultures of infancy*. Mahwah, NJ: Erlbaum.
- Kraemer, H. C., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. *American Journal of Psychiatry, 158*, 848-856.
- LaGuardia, J., Ryan, R. M., Couchman, C., & Deci, E. L. (2000). Within-person variation in security and attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology, 79*, 367-384.
- Levesque, C., Zuehlke, A. N., Stanek, L. R., & Ryan, R. M. (2004). Autonomy and competence in German and American university students: A comparative study based on self-determination theory. *Journal of Educational Psychology, 96*, 68-84.
- MacDonald, K. B. (1991). A perspective on Darwinian psychology: The importance of domain-general mechanisms, plasticity, and individual difference. *Ethology and Sociobiology, 12*, 449-480.
- Mbaku, J. M. (2005). *Culture and customs of Cameroon*. Westport, CT: Greenwood Press.
- McAdams, D. P. (1980). A thematic coding system for the intimacy motive. *Journal of Research in Personality, 14*, 413-432.
- McClelland, D. C. (1961). *The achieving society*. Princeton, NJ: Van Nostrand.
- McClelland, D. C. (1975). *Power: The inner experience*. New York, NY: Irvington.
- McClelland, D. C. (1987). *Human motivation*. New York, NY: Cambridge University Press.
- McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review, 96*, 690-702.
- McClelland, D. C., & Steele, R. S. (1972). *Motivational workshops*. New York, NY: General Learning Press.
- Morgan, C. D., & Murray, H. H. (1935). A method for investigating fantasies: The thematic apperception test. *Archives of Neurology & Psychiatry, 34*, 289-306.
- Nsamenang, A. B., & Lamb, M. E. (1995). The force of beliefs: How the parental values of the Nso of northwest Cameroon shape children's progress toward adult models. *Journal of Applied Developmental Psychology, 16*, 613-627.
- Nunnally, J. C. (1978). *Psychometric theory*. New York, NY: McGraw-Hill.
- O'Connor, B. P. (1998). SIMPLE: All-in-one programs for exploring interactions in moderated multiple regression. *Educational and Psychological Measurement, 58*, 833-837.
- Patrick, H., Knee, C. R., Canevello, A., & Lonsbary, C. (2007). The role of need satisfaction in relationship functioning and well-being: A self-determination theory perspective. *Journal of Personality and Social Psychology, 92*, 434-457.
- Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin, 26*, 419-435.
- Richer, S., Blanchard, C. M., & Vallerand, R. J. (2002). A motivational model of turnover. *Journal of Applied Social Psychology, 32*, 2089-2113.
- Ryan, R. M., & Deci, E. L. (2000). The darker and brighter side of human existence: Basic psychological needs as unifying concept. *Psychological Inquiry, 11*, 319-338.
- Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies, 9*, 139-170.
- Sander, J., & Böcker, S. (1993). Die Deutsche Form der Relationship Assessment Scale (RAS): Eine kurze Skala zur Messung der Zufriedenheit in einer Partnerschaft [German version of the Relationship Assessment Scale: A brief scale for the assessment of partnership satisfaction]. *Diagnostica, 39*, 55-62.
- Schüler, J., Job, V., Fröhlich, S. M., & Brandstätter, V. (2008). A high implicit affiliation motive does not always make you happy: A corresponding explicit motive and corresponding behavior are further needed. *Motivation and Emotion, 32*, 231-242.
- Schüler, J., Sheldon, K. M., & Fröhlich, S. M., (2010). Implicit need for achievement moderates the relationship between competence need satisfaction and subsequent motivation. *Journal of Research in Personality, 44*, 1-12.
- Schultheiss, O. C., & Brunstein, J. C. (2001). Assessment of implicit motives with a research version of the TAT: Picture profiles, gender differences, and relations to other personality measures. *Journal of Personality Assessment, 77*, 71-86.
- Schultheiss, O. C., Jones, N. M., Davis, A. Q., & Kley, C. (2008). The role of implicit motivation in hot and cold goal pursuit:

- Effects on goal progress, goal rumination, and depressive symptoms. *Journal of Research in Personality*, 42, 971-987.
- Schultheiss, O. C., Wirth, M. M., Torges, C. M., Pang, J. S., Villacorta, M. A., & Welsh, K. M. (2005). Effects of implicit power motivation on men's and women's implicit learning and testosterone changes after social victory or defeat. *Journal of Personality and Social Psychology*, 88, 174-188.
- Sheldon, K., & Deci, E. (1993). *The Self-Determination Scale*. University of Rochester.
- Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing ten candidate psychological needs. *Journal of Personality and Social Psychology*, 80, 325-339.
- Sheldon, K. M., & Krieger, L. S. (2007). Understanding the negative effects of legal education on law student: A longitudinal test of self-determination theory. *Personality and Social Psychology Bulletin*, 33, 883-897.
- Smith, C. P. (Ed.) (1992). *Motivation and personality: Handbook of thematic content analysis*. New York, NY: Cambridge University Press.
- Smith, C. P., Feld, S. C., & Franz, C. E. (1992). Methodological considerations: Steps in research employing content analysis systems. In C. P. Smith (Ed.), *Motivation and personality: Handbook of thematic content analysis* (pp. 515-536). New York, NY: Cambridge University Press.
- Sokolowski, K., Schmalt, H.-D., Langens, T. A., & Puca, R. M. (2000). Assessing achievement, affiliation, and power motives all at once: The Multi-Motive Grid (MMG). *Journal of Personality Assessment*, 74, 126-145.
- Spangler, W. D. (1992). Validity of questionnaire and TAT measures of need for achievement: Two meta-analyses. *Psychological Bulletin*, 112, 140-154.
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Thousand Oaks, CA: Sage.
- Thrash, T. M., & Elliot, A. J. (2002). Implicit and self-attributed achievement motives: Concordance and predictive validity. *Journal of Personality*, 70, 729-755.
- Triandis, H. C. (1996). The psychological measurement of cultural syndromes. *American Psychologist*, 51, 407-415.
- Vallerand, R. J. (2000). Deci and Ryan's self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry*, 11, 312-318.
- Van de Vijver, F. J. R., & Leung, K. (1997). *Methods and data analysis for cross-cultural research*. Thousand Oaks, CA: Sage.
- Weinberger, J., Cotler, T., & Fishman, D. (2010). The duality of affiliative motivation. In O. C. Schultheiss & J. C. Brunstein (Eds.), *Implicit motives* (pp. 71-88). New York, NY: Oxford University Press.
- Winter, D. G. (1973). *The power motive*. New York, NY: Free Press.
- Winter, D. G. (1994). *Manual for scoring motive imagery in running text*. Ann Arbor: University of Michigan.
- Winter, D. G. (1996). *Personality: Analysis and interpretation of lives*. New York, NY: McGraw-Hill.
- Woiike, B., McLeod, S., & Goggin, M. (2003). Implicit and explicit motives influence accessibility to different autobiographical knowledge. *Personality and Social Psychology Bulletin*, 29, 1046-1055.