Investigating the Unified Motive Scales:

The Predictive Validity of the Achievement Motive Subscale

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Summary

Explicit motives are well-studied in the field of personality and motivation psychology. However, the statistical overlap of different explicit motive measures is only moderate. As a consequence, the *Unified Motive Scales* (*UMS*; Schönbrodt & Gerstenberg, 2012) were developed to improve the measurement of explicit motives. The present longitudinal field study examined the predictive validity of the UMS achievement motive subscale. Applicants of a police department ($n = 168$, $M_{age} = 25.11$, 53 females and 115 males) completed the UMS and their performance in the selection process was assessed. As expected, UMS achievement predicted success in the selection process. The findings provide first evidence for the predictive validity of UMS achievement in an applied setting.

Keywords: explicit achievement motive; Unified Motive Scales; predictive validity; performance; success.

Evaluating the Unified Motive Scales:

Evidence for the Predictive Validity of the Achievement Motive

The explicit achievement motive describes the tendency to consciously seek "competition with some standard of excellence" (McClelland, Atkinson, Clark, & Lowell, 1953, p. 76) and is a well-studied individual-difference construct in psychology. Typically measured by self-report questionnaires, the explicit achievement motive has been linked to various achievement outcomes, for example grade point average (GPA) of college students (Robbins et al., 2004) or athletic success of soccer players (Zuber, Zibung, & Conzelmann, 2015).

Traditionally, the explicit achievement motive was operationalized by the *Achievement Motives Scale* (*AMS*; Gjesme & Nygard, 1970) or the achievement subscales of the *Personal Values Questionnaire* (*PVQ*; McClelland, 1991) and the *Personality Research Form* (*PRF*; Jackson, 1984). However, because the correlations between these scales were only moderate (*r* between .53 and .58; Engeser & Langens, 2010),[1] Schönbrodt and Gerstenberg (2012) applied item response theory to examine the measurement precision of these and other scales assessing explicit motives. They formed content clusters of various motive scales, explored the factorial structure of these clusters, selected items based on their association with the estimated true value of the latent variables, and performed scale analyses to construct optimal scales in terms of reliability and content validity (Schönbrodt & Gerstenberg, 2012). Based on the results of their examination, an improved measure of the achievement motive – as well as the affiliation, intimacy, power, and fear motive – was developed: the *Unified Motive Scales* (*UMS*; for more information regarding scale development, see Schönbrodt & Gerstenberg, 2012).

The achievement motive subscale of the UMS consists of 10 items from four existing scales. Seven items were derived from the PVQ and one each from the PRF, the AMS, and

the GOALS inventory (Pöhlmann & Brunstein, 1997). In addition to the 10-items subscale, short scales with six and three items were developed.[2]

In comparison with traditional scales, the UMS had the highest measurement precision (i.e., test information across the range of the latent trait). Based on established motive scales and constructed to be more reliable and economical (i.e., shorter), the UMS emerge as a new standard measure of explicit motives. An initial study on the validity of UMS achievement reported a significant correlation with performance on a Sudoku puzzle (Schönbrodt & Gerstenberg, 2012, Study 4). Furthermore, UMS achievement had incremental validity in comparison with traditional scales (AMS, PRF). In a second study, UMS achievement correlated significantly with self-reported GPA of college students (Li, Sheldon, Rouder, Bergin, & Geary, 2019, Study 3).

For newly developed scales, thorough validation is mandatory. To the best of our knowledge, there has been no research on the predictive validity of UMS achievement in an applied setting. We intend to contribute to closing this gap by evaluating the effect of the explicit achievement motive on performance in a longitudinal field study.

We tested the predictive validity of UMS achievement in the context of a larger research project with individuals applying for a trainee position at a [masked] police department (i.e., individuals pursuing the career goal of becoming a police officer), where the personnel selection process included several stages. In order to be successful, the minimum standards of the police department had to be met and, additionally, the number of competitors with better performance had to be lower than the number of trainee positions. Thus, the predictive validity of UMS achievement was tested in a highly challenging achievement context.

As the UMS are aimed to be context-independent (Schönbrodt & Gerstenberg, 2012, p. 737), the achievement motive is best suited for predicting overall performance, whereas

results in specific tests (e.g., physical ability) are best predicted by context-specific measurement instruments (e.g., Achievement Motives Scale-Sport; Elbe & Wenhold, 2005). Correspondingly, we expected effects for UMS achievement particularly with regard to overall performance, not excluding that there may be (probably smaller) effects on the performance at specific stages. In the present study, aggregating test scores of several stages was not possible because rejected applicants did not participate in later stages of the selection process and, consequentially, not all participants performed all tests. Therefore, objective success (i.e., passing all stages of the selection process) was used as a measure of overall performance. Previous achievement motive research proposed that a high achievement motive should be related to high autonomous motivation, effort, and persistence in achievement contexts (e.g., Lang & Fries, 2006; Sheldon & Cooper, 2008). This, in turn, would lead to better performance. We therefore expected that individuals high in UMS achievement should be more probable to succeed in the selection process.

Method

Participants

The present sample consists of applicants from four consecutive and identical selection waves at a [masked] police department over a time span of two years. Sixteen participants were excluded because of their withdrawal from the selection process and fourteen participants for various other reasons.[3] The final sample ($n = 168$) consisted of 53 female and 115 male applicants ($M_{age} = 25.11$, $SD_{age} = 3.74$, age range = 20-35).

Procedure

The selection process included four stages, each of which had to be passed to get to the next stage (for details, see Electronic Supplementary Material, ESM). In stage 1, applicants took various tests (e.g., cognitive ability test) and filled out several electronic questionnaires (e.g., integrity test). In stage 2, five exercises testing physical abilities were

administered. Stage 3 included two job interviews, which were both conducted with one interviewer and two observers. In stage 4, all remaining applicants were re-evaluated in terms of their performance at the different stages. About two thirds of these applicants (those with the highest relative performance) then received a job offer.

Before stage 1 took place, applicants were invited by the police department to participate in the present study in exchange for a compensation of 50 [masked currency]. The study was carried out online with three questionnaires. All reported subjective psychological measures were administered at the first measurement time, which was just before stage 1 and approximately 5 months before stage 4. As a condition of participation in the study, applicants had to permit access to their performance data.

Measures

Unified Motive Scales (UMS). The short version (three items per motive) of the UMS (Schönbrodt & Gerstenberg, 2012) was used to measure the achievement motive (UMS achievement, $\alpha = .70$) as well as the affiliation motive (UMS affiliation, $\alpha = .71$), the power motive (UMS power, $\alpha = .69$), and the fear motive (UMS fear, $\alpha = .65$) as control variables. Items were measured on a 6-point Likert scale ranging from 0 (*strongly disagree*) to 5 (*strongly agree*) for statements and from 0 (*not important to me*) to 5 (*extremely important to me*) for goals.

Additional control variables. Age, gender (0 = male, 1 = female), previous applications at police departments, career goal attainability, career goal desirability, and general self-efficacy were used as additional control variables (for details, see ESM).

Success in the selection process. Objective success (i.e., passing all four stages) was a dichotomous variable (0 = no success, 1 = success). In total, 36 out of 168 participants (21.4%) were successful in the selection process.

Results

Statistical analyses were conducted using *SPSS* (version 23; IBM SPSS Statistics Inc., Armonk, NY). Descriptive statistics of the independent variables are provided in Table S1 (in ESM).

UMS achievement as a predictor of success

We performed a hierarchical logistic regression analysis to test if UMS achievement increased the probability of success. The first block of the regression analysis included all control variables. There was a significant effect of previous applications ($OR = 0.386$, $p_{boot} = .024$). Applicants who had at least one previous application showed a 0.61 times lower probability of being successful.

In the second block, UMS achievement was added. Table 1 depicts the results of the hierarchical logistic regression analysis. UMS achievement was a significant predictor: A one unit increase in UMS achievement resulted in an increase of success probability by a factor of $OR = 2.27$. The results thus support the predictive validity of UMS achievement.

In order to test if UMS achievement had an effect at the different stages of the selection process, we additionally performed linear and logistic regression analyses predicting test scores and success at stages 1 to 3 (see ESM). UMS achievement significantly predicted success at stage 3, but no test scores or success at other stages.

– Insert Table 1 here –

Ancillary analysis

Previous literature (e.g., Sheldon & Cooper, 2008) suggested that the effect of the achievement motive on performance might be mediated by autonomous motivation. Therefore, we additionally tested this mediation effect and found support for it in our data. The procedure and results are described in the ESM.

Discussion

The present research aimed at contributing to the validation of the Unified Motive Scales (Schönbrodt & Gerstenberg, 2012) by evaluating the predictive validity of the achievement motive subscale. As hypothesized, the achievement motive predicted success in the multi-stage selection process of a police department. Based on these insights, future research can target more content-related questions using UMS achievement, for example with regard to the stability of the achievement motive over time in various professional contexts or the mediating mechanisms responsible for higher performance in employees with a stronger achievement motive.

Similar to previous studies (e.g., Zuber et al., 2015), the achievement motive predicted success – and thus overall performance – in a challenging achievement context. However, this study was the first to use UMS achievement to predict performance in an applied setting (cf. Li et al., 2019; Schönbrodt & Gerstenberg, 2012). In addition, the context of a selection process, to the best of our knowledge, is novel in research on the explicit achievement motive.

Interestingly, UMS achievement predicted overall performance in the selection process but not test scores at the different stages. This underscores the reasoning for matching the measurement of the achievement motive and corresponding outcome variables with respect to the level of specificity. Further analyses showed that the achievement motive was positively associated with the probability of success at stage 3, whereas this association did not reach significance for the other stages. This implies an accumulated effect: Success in the selection process accumulated as a result of achievement-related efforts across all stages. Thus, overall success may provide a more valid indicator of performance than each single performance indicator.

Limitations and Conclusion

There are at least three limitations to our study. First, although the three-item UMS achievement subscale showed acceptable reliability, it would be advisable to replicate the findings with the whole ten-item scale (Schönbrodt & Gerstenberg, 2012). Second, rejected applicants did not participate at later stages of the selection process. Hence, it was not feasible to use aggregated test scores that might be a more accurate measure of overall performance than success. Third, although the present selection process parallels standard procedures in the selection of personnel, physical ability tests are not that common and are only used for certain professions. Thus, results may be especially generalizable to selection processes for such professions (e.g., military, fire brigade).

This study offers first evidence for the predictive validity of the UMS achievement motive subscale in an applied setting. Future studies are needed to further validate the improved measurement of explicit motives with the UMS.

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Tables

Table 1

Logistic Regression of Success in the Selection Process on Control Variables and UMS Achievement

Predictors	Success in the selection process				
	b	*SE*	Wald (*df* = 1)	p_{boot}	*OR*
Intercept	-0.779	3.679	0.04	.840	0.46
Control variables					
Age	-0.009	0.057	0.03	.882	0.99
Gender	-0.710	0.502	2.00	.166	0.49
Goal attainability	0.057	0.222	0.07	.820	1.06
Goal desirability	-0.297	0.216	1.89	.175	0.74
General self-efficacy	-0.029	0.041	0.49	.434	0.97
Previous applications	-0.962	0.453	4.51	.024	0.38
UMS affiliation	0.222	0.324	0.47	.525	1.25
UMS fear	0.363	0.324	1.26	.256	1.44
UMS power	-0.346	0.263	1.73	.208	0.71
Predictor of interest					
UMS achievement	0.821	0.368	4.98	.010	2.27

Note. N = 168. *b* = unstandardized bootstrap estimate of the *b*-value; *SE* = standard error; p_{boot} = bootstrap *p*-value for unstandardized regression coefficient based on bias-corrected and accelerated bootstrapping with 10,000 replications.

Footnotes

[1]Schönbrodt and Gerstenberg (2012) found similar correlations (r between .48 and .64).

[2]These scales consist of those items of the whole scale with the highest discrimination parameters.

[3]Seven participants were excluded because they filled out questionnaire T_1 after stage 1, six participants because they failed the selection process because of medical reasons or a failed mandatory background check performed by the police department, and one participant because she/he did not appear to have filled out the questionnaires seriously.