

MEASUREMENT OF THE IMPLICIT AND EXPLICIT

ACHIEVEMENT MOTIVE:

New Perspectives



Inaugural-Dissertation

zur Erlangung des Doktorgrades der Philosophie

an der Ludwig-Maximilians-Universität

München

vorgelegt in englischer Sprache von

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2011

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Tag der mündlichen Prüfung: 22.07.2011

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ABSTRACT

MEASUREMENT OF THE IMPLICIT AND EXPLICIT ACHIEVEMENT MOTIVE: NEW PERSPECTIVES

A lot of attention is lately drawn to the measurement of implicit and explicit achievement motives as two distinct but intercorrelated systems. The general line of research indicates that correlations between the Picture Story Exercise (PSE) and self-report questionnaires which assess implicit and explicit achievement constructs respectively are normally very low and nonsignificant. The new approach to the measurement of the explicit motives violates this assumption and consists in the construction of the cue- and response-matched questionnaire version of the PSE (PSE-Q) which might correlate significantly with the PSE.

The first goal of the current study was to explore this new line of thinking by constructing a PSE-Q for the measurement of the explicit achievement motive based on the original scoring key by McClelland et al. (1953) and validating it with a traditional measure of the explicit achievement motive, LMI-K (Schuler & Prochaska, 2001), as well as with academic success criterion, such as grade point average (GPA). The second goal of the current study was to increase the number of picture cues available for eliciting implicit achievement motive imagery, thus, four new picture cues were introduced in the PSE.

Three personality measures—PSE, LMI-K, and PSE-Q, were completed in one testing session by the group of 134 participants online. Results indicated that all new picture cues were suitable for the measurement of the implicit achievement motive. No significant correlations were obtained between the PSE and LMI-K. Correlations between the PSE and the PSE-Q were found to be significant, whereas, LMI-K showed significant variance overlap with the PSE-Q. In line with the established research, academic success (GPA) was significantly predicted by the explicit achievement motive measured with LMI-K. These findings suggest that implicit and explicit achievement motives are distinct but related constructs.

ACKNOWLEDGMENTS

First and foremost, I am grateful to my doctoral advisor, Prof. Dr. Detlef Urhahne for his constant organizational and informational support, quick feedback and understanding. I am also indebted to Prof. Dr. Wolfgang Mertens, who helped me during the beginnings of this project, gave me the first ideas and directions and without whom this work would not have existed.

Furthermore, I want to thank Prof. Dr. Tatjana Seibt for her full engagement and for spending many hours on consulting me regarding different aspects of this project. She was the one who recruited my first samples of subjects.

My special thank is to the wonderful team of the faculty of General Psychology II, Prof. Dr. Markus Maier and Dr. Felix Schönbrodt who were always quick to help and recruited my major sample of subjects in their seminars and lectures. And of course, I want to thank all the students who participated in my research and inspired me with their feedbacks.

Last but not least, I am thankful to my friend, Iris Eberl, who took time to proof read the German parts of my work and helped me to improve them significantly. And especially, I am grateful to my family for their support and respect in all I do.

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CHAPTER 1. ACHIEVEMENT MOTIVE IN THE ACHIEVEMENT-ORIENTED SOCIETY

1.1. The Importance of the Measurement of the Achievement Motive

Why is it so important to get the information about people's motives? Recognizing the motive structure of a person can help us get to know which incentives cause positive emotions and influence the striving for a goal, and, on the other hand, we can predict which situations can cause fear and understand how they can be avoided (Langens, Schmalt, & Sokolowski, 2005).

Research since the 1950s has focused on three major motivational needs: the need for achievement (*n* Achievement), the need for power (*n* Power), and the need for affiliation (*n* Affiliation). From all the motivational systems the achievement motive attracted the most attention due to its relevance in all spheres of life. Many authors stress that along with the cognitive abilities, general achievement motivation can be viewed as the second career-relevant trait, important for both academic and career success (e.g., Eckardt & Schuler, 1992; Schuler & Prochaska, 2001; Zimmermann, 2008).

For example, Schuler (1991) mentions achievement motivation among four other factors such as intelligence, mental stability, interpersonal competence, and self-confidence which significantly influence and determine the career performance. In a metaanalysis by Scholz and Schuler (1993), the connection between the overall assessment ratings and different personality constructs was researched. The analysis of 51 studies representing 66 independent samples revealed that interpersonal competence, achievement motivation, dominance, and self-confidence showed the highest correlations with the overall assessment rating. And the achievement motive, in particular, was more significantly correlated with the general score of an assessment center ($r = .30$) than dimensions of the Big Five Model.

Presenting a newly-developed self-report measure of the achievement motive, Lesitungsmotivationsinventar (LMI [Schuler & Prochaska, 2001]), Schuler and Frintrup (2000, 2002) state that abilities and skills are important prerequisites of successful work performance. But when employees lack job-related motivation, these qualities cannot be fully revealed. Then, high achievement motivation, along with intelligence, becomes relevant and plays an especially important role in situations when no external pressure exists and people have to make independent decisions. Thus, this personality trait is indispensable for professions with high degrees of behavioral freedom, for example in leading positions, qualified counseling jobs, or police services.

The pioneers of the achievement motivation research, McClelland and Atkinson, performed a lot of studies to prove the importance of the achievement motive for the prediction of career performance and success (e.g., Atkinson, 1966a; McClelland, 1985a, 1987; McClelland, Atkinson, Clark, & Lowell, 1953; McClelland & Boyatzis, 1982; McClelland & Franz, 1992). Positive correlations also exist between the achievement motive construct and academic performance (e.g., Busato, Prins, Elshout, & Hamaker, 2000; Giesen, Gold, Hummer, & Jansen, 1986; Robbins et al., 2004; Trapmann, 2008; Trapmann, Hell, & Schuler, 2005; 2007, etc.).

Personality psychology is an interdisciplinary and currently highly dynamic area of psychology. One of the current fields of research which is gaining popularity is the meaning of the personality for the prediction of academic and career performance (Borkenau et al., 2005). Thus, the measurement of the achievement motive is a relevant trend in the personality research development.

The importance of the measurement of the achievement motivation variables is mentioned by Kuhl (as quoted in Zimmermann, 2008), as soon as it „lets people open the door to unavailable before freedom of action and developmental opportunities and, thus, is more than just academically interesting“ (p. 19, own translation). Muck and Stumpp (2007) also

conclude that „practical relevance is ascribed to achievement motivation because it is always mentioned in many work positions“ (p. 188, own translation).

Extending the relevance of the achievement motive on the individual level, McClelland and his associates included into the field of their studies the exploration of nationalities (McClelland, 1961, 1985a). Their research turned into the investigation of national differences based on Max Weber's thesis that the industrialization and economic development of the Western nations were related to the Protestant ethic and its corresponding values supporting work and achievement. They argued that measures of collective achievement motivational concerns of nations or cultures would predict long-term social trends. For example, if a culture's collective fantasies are oriented toward achievement, that culture should contain a larger amount of entrepreneurs. Collective levels of need for achievement would be also responsible for more rapid economic growth. Finally, high achievement concerns combined with low opportunities to achieve would produce frustration, anger, and political protest.

Thus, the study of the achievement motive can help us predict relevant outcomes on both the individual and national levels.

1.2. Motivation Tests in the Personnel Selection

The measurement of achievement motivation is relevant for a number of areas: personnel selection, personnel development, university and school counselling, sport psychology (Schuler & Prochaska, 2001). But in spite of the obvious importance of the achievement motivation for the performance and success, at work or in studies, the implementation of its measurement tools in the German-speaking area is not impressive.

In general, research shows that the personality tests are still rarely used for the personnel selection purposes in Germany (1–20%), in comparison with other countries like

France, Belgium, Great Britain (21–50%), and Spain (51–80%) (Ryan, McFarland, Baron, & Page, 1999).

Two extensive studies give us a wide review of the instruments used in the internal and external personnel selection in Germany (Hell, Boramir, Schaar, & Schuler, 2006; Schuler, Hell, Trapmann, Schaar, & Boramir, 2007).

Hell et al. (2006) reported and evaluated the instruments for internal personnel selection and development in $N = 125$ of the most important German companies. Types of methods applied for both purposes were different according to positional groups. Especially noteworthy was the use of assessment centers and management audits for the group of supervisors and executives. Lower ranking employees rarely participated in external trainings, while managers rather infrequently participated in internal methods of personnel development. In general, structured interview through personnel department was the most often used instrument (67.2%), with the Assessment Center taking the second place (48%). Personality tests were implemented in the 7.2% of the companies.

Additionally, practitioners were asked to appraise validity, practicality, and acceptance of selection and training methods. As expected, appraisals were more positive for users compared to nonusers of a given method.

In the related research, Schuler et al. (2007) presented the current practice of using external selection instruments in 125 German organizations of different sizes and sectors. Interviews and application documents were used most often (99.2%). Structured interviews were implemented in 81% and Assessment Center in 57% of the enterprises. In comparison to the internal personnel selection practices, about 20% of the German enterprises used personality tests for the external personnel selection. Personality tests were also used more often for the selection of trainees and executive managers. Online instruments were rarely used, with the exception of online application forms.

It is interesting to note that as far as the future trends are concerned, 20% of the interviewed companies were planning to implement Assessment Center, personality tests, or structured interviews. 19% of them also planned to probe the online-based procedures. The results show that nothing has changed since 20 years, and interview and application materials are still the most often used procedures for the external personnel selection.

Taking into account the fact that the influence of the German personality assessment practices on the international market is relatively low (Hülshager & Maier, 2008), as well as international visibility and impact of German psychological research (Pfrang & Schneider, 2006), it might be beneficial, as a future trend, to promote a stronger international orientation of the German companies, adopting the international personnel selection procedures (e.g., usage of the personality tests).

The review by Hülshager and Maier (2008) which focused on the role personality traits and cognitive abilities play for criteria of occupational success, also illustrated that German personality and intelligence tests are not sufficiently validated with respect to job-relevant criteria. This may be one reason why personality and intelligence tests are relatively rarely used for personnel selection in Germany, despite the international evidence of their validity.

Thus, it is important to carry out more validation studies to get more precise information about the predictive validity of the separate personality dimensions for career performance and success. Also attention should be paid to new developments in the personality measurement, for example, indirect measurement techniques, and the research on their relevance for the personnel assessment (Hülshager & Maier, 2008).

CHAPTER 2. ACHIEVEMENT MOTIVATION—HISTORICAL BACKGROUND

2.1. Overview of the Main Terms

In an attempt to better understand what motivates us, psychologists have viewed motivation in different ways: as instincts that direct our behavior, as drives that motivate us to find ways to feel better, as the desire to maintain an optimal level of arousal in our body, or as incentives that guide us to seek reward from the world. However, none of these theories seems to fully explain all aspects of motivation. Today we recognize that each of the theories has its weaknesses and strengths.

But before we analyze contemporary motivational theories, it is important to get a clear understanding of the terms *motive* and *motivation*.

2.1.1. *Motive* versus *motivation*.

To start with, Atkinson (1966d) associates the motive with the „dispositions to strive for rather general goal-states, kinds of satisfaction, or effects“ (p. 601), while motivation refers to the „arousal of a tendency to act to produce one or more effects“ (p. 602). Thus, he perceives motive as disposition and motivation as aroused state.

Weiner (1975) distinguishes these terms explaining that while „motive is a relatively stable person’s disposition“, . . . „motivation is, on the contrary, an instantaneous, more or less short-term behavioural tendency, which can quickly change depending on the situational factors“ (p. 15, own translation).

These differences between motive and motivation are also termed by Heckhausen (1967) as potential and actual motivation. He adds that modern psychology of motivation employs the term motive to identify individual deviations, which “are not only stable over

time but also across situations” and “represent person-specific traits in the sense of deviant value dispositions” (Heckhausen, 1991, p. 2). Each motive has its own set of action-goals along with a general label, for example, *achievement*, *power*, and so forth. For example, achievement motive refers to action-goals that primarily involve a concern with standards of excellence. However, the actual, concrete goals subsumed under each motive category can be numerous and quite varied. Thus, motivation “represents an orientation toward a particular goal, at a particular time, by a particular individual” and implies “the product of person–situation interaction” (Heckhausen, 1991, p.3).

To sum it up, all the authors universally agree that motive is a person-specific disposition, as well as a relatively stable and situation-dependent behavioral tendency. Each motive can be defined more narrowly as achievement motive, affiliation motive, and so forth. On the other hand, motivation is a complex of different organismic and environmental variables which function consists in general activation and specific orientation of experience and behavior (Keller, 1981).

2.1.2. Complexity of the leading motivational theories.

In comparison with this agreement on the main motivational terms, the science of motivational theories is far away from concordance. When we have a closer look at the modern motivational theories, we come to a confusing conclusion that there is no universal pattern according to which theories are structured and explained by each author.

For example, Weiner (1992) divides the motivational theories into three big parts:

- *Machine metaphors* include psychoanalytic, ethological, sociobiological, drive, and gestalt theories of motivation.
- *Godlike metaphors* include expectancy–value and attributional theories of motivation.

This part also includes a theory of achievement motivation.

- *Godlike metaphors* include such topics as emotions, aggression, and interpersonal relationships.

Heckhausen (1980) divides the motivational theories according to a totally different paradigm:

- Trait theories (Catell, McDougall, Murray, Maslow).
- Chapter about motivation as a function of expectancy and incentive incorporates theories by Lewin, Hull, and expectancy–value theories.
- In different chapters the achievement motive (in combination with ideas of Murray and McClelland) and achievement motivation (e.g., Atkinson's theory) are explained.
- Separate chapter is devoted to the social motives, such as affiliation and power, as well as antisocial motives, such as aggression.
- Finally, attribution (Rotter, Heider, Kelley) and attributional theories (Weiner) are presented, and some advanced perspectives are studied, for example, self-evaluation as a motivational principle, and difference between intrinsic and extrinsic motivation.

Again new approach is presented by Petri (1996) who systematizes motivational theories according to four big approaches:

- Biological approach includes genetic contributions to motivated behavior and physiological mechanisms of arousal and regulation.
- Behavioral topics of drives, incentives, and learning (intrinsic motivation issue included) are studied.
- Cognitive expectancy–value (short part about need for achievement) and attribution approaches are examined.
- Emotions.

Rheinberg (1997) divides motivational theories into:

- Early concepts, such as instincts and drives (McDougall, Freud, Hull).
- Motivation as person–environment interaction (Lewin, Murray).

- Achievement and power motivation as separate constructs.
- Complex motivational structures, such as intrinsic motivation and flow experience.

Schneider and Schmalt (2000) present the general approaches to the study of motivational psychology according to the psychological school: instinct and ethological, biological and sociobiological, psychoanalytical, behavioral, emotional, cognitive, and action theories. Then, different systems such as hunger, aggression, or achievement motivation are viewed separately.

Finally, Rudolph (2007) combines different approaches to the division of motivational theories. At first, the author views motivational theories according to their school or psychology trend: psychoanalysis by Freud, behaviorism by Hull and Skinner, gestaltpsychology by Lewin. Then, a separate chapter is dedicated to the achievement motivation theory concentrating on the ideas of Atkinson and McClelland. Influential attribution and attributional theories are also examined. The book ends with the psychology of will (Kuhl, Gollwitzer and Seligman) and evolutionary theories of motivated behavior.

As we can conclude, it is very hard to choose some particular taxonomy for structuring the motivational theories. Based on the mentioned divisions, it is even harder to place the study of achievement motivation within these versatile taxonomies.

There is one classification though which attracts attention due to its clarity, logic, and also ability to incorporate all the leading theories of achievement motivation into its paradigm. According to the suggestion by Kanfer (1990), all the motivational theories can be divided into (1) need–motive–value theories, (2) cognitive theories of the goal choice, and (3) volitional theories of the goal realisation. The modern German-speaking researchers also follow this taxonomy (Brandstätter, 2005; Brandstätter & Frey, 2004; Brandstätter & Gollwitzer, 2005; Brandstätter & Schnelle, 2007). At the same time all the influential achievement motivation theories can be organized using this division:

1. *Content theories of needs* specify the sources of particular goals which lie in the relatively stable strivings of a person (needs, motives, values). The leading authors of this approach in the achievement motivation field are Murray and McClelland.
2. *Cognitive theories of the goal choice or expectancy–value theories* view humans as decision makers who consciously choose their goals and, doing so, rely on the attractiveness of the goal (value) comparable to the probability (expectancy) to achieve it. The leading authors of this approach are Atkinson and Weiner.
3. *Volitional theories of the goal realization* focus on the goal-realizing activity. Important for the achievement motivation research is the theory by Heckhausen.

In spite of the demonstrated high relevance of the achievement motivation and the extensive research on this topic, the degree of homogeneity, universality, and generalizability of its construct is still not totally confirmed (Schuler & Prochaska, 2001). As we will see it from the next chapter, the existing theories of the achievement motivation try to view its construct from different angles.

2.2. Influential Achievement Motivation Theories

2.2.1. Content theories of needs.

The content theories ascribe the sources of the specific action goals to the relative long-term efforts of the person (needs, motives, values). It is assumed that the fulfillment of these needs leads to higher satisfaction and better performance.

2.2.1.1. Murray's theory of needs.

Murray (1938) played an important role in the history of the motivational research. On the one hand, he first called attention to the need for achievement, which he conceived:

as the desire to accomplish something difficult. To master, manipulate or organize physical objects, human beings, or ideas. To do this as rapidly and as independently as possible. To overcome obstacles and attain a high standard. To excel one's self. To rival and surpass others. To increase self-regard by the successful exercise of talent (p.164).

Need for achievement was one of the 20 basic human needs which formed the taxonomy developed by Murray. He viewed needs as having a two-component structure. The first component consists of the object which can satisfy the need. And the second component includes the energy that drives the behavior and influences the intensity of the need.

Murray's second contribution to the study of achievement motivation was the development of an instrument to assess need states. This projective measure, the Thematic Apperception Test (TAT), was almost universally adopted by other researchers and since then inspired a lot of controversial discussions about its psychometric properties and predictive validity.

Projective tests are the most controversial diagnostic tools. The notion of projection dates from Freud who described projection as a psychological defense mechanism, whereby one *projects* one's own undesirable thoughts, motivations, desires, and feelings onto someone else. It is a common process, used to some degree by every person. These projections are provoked by ambiguous stimuli and give information about unconscious aspects of the personality (Amelang & Schmidt-Atzert, 2006).

Thus, in the projective assessment the participant is presented with an ambiguous stimulus and has to provide a fairly unstructured response. After the participant responds to some question about the stimulus, the response is coded by trained judges in terms of some underlying dimensions. The basic notion is that in the presence of an ambiguous stimulus, people project their latent needs, desires, and motives into the response (Kanfer, 2008).

The TAT works according to the following principle: the participants are shown ambiguous pictures and requested to write interesting stories to these pictures. Murray assumed that life experiences, motives, and needs of a participant are reflected in the main character of the story (e.g., Langens & Schüler, 2003). The stories are then scored with the help of coding systems which were derived empirically to identify latent achievement, power, and affiliation themes.

The most well-known coding system for the analysis of the achievement motive measured with the help of the TAT was developed by McClelland and his colleagues (McClelland et al., 1953). All the later developed scoring keys (e.g., Heckhausen, 1963; Winter, 1994) were based on their original system.

2.2.1.2. McClelland's theory of needs.

The next influential approach in this type of theories is McClelland's theory of needs. This theory stresses the affective components of the motivational process and was developed by McClelland and his colleagues (e.g., Atkinson & Raynor, 1974; McClelland, 1961, 1975, 1985a). According to McClelland (1985a), motive is "a recurrent concern for a goal state based on a natural incentive—a concern that energizes, orients, and selects behavior" (p. 590).

The McClelland's theory focuses on three needs:

- Need for achievement—the drive to excel, to achieve in relation to a set of standards, to strive to succeed.
- Need for power—the need to make others behave in a way that they would not have behaved otherwise.
- Need for affiliation—the desire for friendly and close interpersonal relationships.

It is assumed that all people possess all of the above motives, though in different degrees.

McClelland and his colleagues did a lot for the achievement motivation research, and their works and ideas will be often cited in this paper. Summarizing all of their most important findings and innovations, it is possible to single out:

1. The adoption of the TAT projective approach to the assessment of the achievement motive and development of a new scoring key (McClelland et al., 1953).
2. The division of the achievement motive into two qualitatively different systems: implicit (measured with the fantasy-based measures like the TAT) and explicit (measured with self-report questionnaires), and explanation of their distinctions (McClelland, 1980; McClelland, Koestner, & Weinberger, 1989).
3. The study of the predictive validity of the both types of motives and their application in practice (McClelland, 1987; McClelland & Boyatzis, 1982; McClelland & Franz, 1992; McClelland & Koestner, 1992).

McClelland and his colleagues defined the need for achievement as “the concern over competition with a standard of excellence“ (McClelland et al., 1953, p. 111). In the first of their studies, the authors tried to arouse the achievement motive by telling some young men that performance tests they were taking would give an indication of their general intelligence and leadership capacities, and then manipulating the amount of success and failure they experienced on those tests (McClelland et al., 1953).

Shortly afterwards, subjects were asked to write brief, five-minute stories to a series of four to six pictures for what was sometimes described as a test of creative imagination and sometimes as a picture–story exercise. Some of the pictures were taken from the Murray’s TAT, and some were chosen specifically for this study.

Characteristics of stories written after achievement motive arousal were carefully compared with characteristics of stories written when no attempt to manipulate motivation was made (called the *neutral condition*). The chief difference was in a characteristic labeled achievement imagery, which was defined as being present in a story when someone was

involved in doing something better. *Doing better* involved an implicit or explicit standard of excellence, for example, winning a contest, fixing a machine, attaining a unique accomplishment, such as inventing something, or being concerned over a long period of time with a performance goal. Involvement was indicated by an explicit statement of a desire or intent to do well, by affective concern over goal attainment (feeling good after success or bad after failure), or by extraordinary efforts to achieve a goal.

Once a story was identified as being achievement-related because of the presence of such imagery, it was searched for other characteristics that differentiated the stories written under achievement-oriented versus neutral conditions. A number of such characteristics were found and carefully defined so that two trained judges could agree almost perfectly on their presence or absence in a story. The sum of such characteristics present in all stories (a protocol) written by a subject was called the *n* Achievement score, following Murray's (1938) practice of abbreviating need for achievement to *n* Achievement or *n* Ach.

“What I wanted to do was prove that Murray was right—that motives are key and often unconscious determinants of behavior, they are independent of traits, and they are uniquely measurable with the TAT”, wrote McClelland (1999, p. 164) and dedicated a lot of efforts to proving his ideas.

2.2.2. Cognitive theories of the goal choice or expectancy–value theories.

2.2.2.1. John Atkinson's model of risk choice.

Starting as a colleague of McClelland and helping him to develop a scoring system for the measurement of *n* Achievement with the TAT, later on John Atkinson developed his own theory of achievement motivation using an expectancy–value framework.

Achievement-oriented behavior is viewed by Atkinson as a resultant of a conflict between approach and avoidance tendencies. When a person anticipates success of an

achievement-related action, he or she experiences a feeling of pride, in opposite to the possibility of a failure which is connected with the consequent emotions of shame. The choice or rejection of the achievement-related activities by an individual depends on the strength and prevalence of these anticipated emotions. Thus, Atkinson views achievement behavior as a result of an emotional conflict between hope for success and fear of failure (Atkinson, 1966c).

Further on, the desire to choose an achievement-related activity is also determined by three factors, according to Atkinson (1966b):

1. The need for achievement or *motive* for success, a relatively stable disposition within the person to strive to approach a certain class of positive incentives (goals) or to avoid a certain class of negative incentives (threats).
2. The probability that one will be successful at task, or *expectancy*, particular kind of cognitive association aroused in the person by situational cues.
3. And the *incentive* value of success, some potential reward or goal that can be manipulated by the experimenter.

Thus, for example, the tendency to avoid an achievement-related activity is a multiplicative function of the motive to avoid failure, the probability of failure, and the incentive value of failure. On the other hand, the tendency to approach an achievement-related activity is a multiplicative function of the motive to approach success, the probability of success, and the incentive value of success. And finally, the total strength of the achievement motive can be equal to the strength of the tendency to approach the task minus the strength of the tendency to avoid the task.

Last implication of his theory was that Atkinson tried to predict which task goal a person will choose, if he or she has to choose between tasks of different degrees of difficulty (Atkinson, 1966c). He came to an important conclusion that success-motivated people choose normally tasks of medium difficulty, while the failure-motivated individuals choose

nonchallenging or too difficult tasks. The person in whom the achievement motive is stronger should set his or her level of aspiration in the intermediate zone where there is moderate risk. On the other hand, the person in whom the motive to avoid failure is stronger should either select the easiest of the alternatives or set his or her goal where there is virtually no chance for success.

Atkinson's theory also gave impulses to the formulation of other expectancy–value models in work contexts, such as, for example, VIE-Model by Vroom (Brandstätter & Schnelle, 2005). His model also served as a basis for the construction of the self-report measure of the achievement motive, Achievement Motive Scale (AMS [Gjesme & Nygard, 1970]).

2.2.2.2. Weiner's attributional theory of achievement-related behavior.

Attributional theory is concerned with how individuals interpret events and how this relates to their thinking and behavior.

Weiner and his colleagues (Weiner et al., 1971; Weiner, 1986) developed a theoretical framework that has become a major research paradigm of social psychology and linked motivation and emotion. Weiner focused his attributional theory on achievement motivation (Weiner, 1974) and assumed that people try to determine the reasons for their actions, thus, attribute causes to behavior.

Contrary to Atkinson, Weiner argued that the reason subjects with high *n* Achievement choose moderately difficult tasks is that such tasks are more diagnostic of how well they are doing. If the task is easy, they will not know whether success was due to their efforts, and, if the task is too difficult, they will also not be able to tell what their efforts produce because they will fail. According to Weiner, high achievers prefer these tasks not because they get more pleasure out of working with them in Atkinson's sense, but because

they can find out better from performing such tasks whether they can attribute their success to their own efforts.

Attributional theory has been used to explain the difference in motivation and attributional styles between success-motivated and failure-motivated individuals.

According to attributional theory, when success-motivated people experience success, they attribute it to internal reasons, such as their own abilities or own efforts. When they experience failure, they attribute it either to external reasons or internal lack of efforts. Both attributions do not disturb their feeling of self-worth—failure doesn't affect their self-esteem, but success enhances feelings of pride and confidence. On the contrary, failure-motivated individuals attribute their successes to external factors and failures—to internal reasons. Thus, even experiencing success, they cannot profit from it because failure-motivated individuals do not feel responsible for it, and successes do not boost their feelings of pride and confidence.

2.2.3. Volitional theories of the goal realization and Heckhausen's self-reinforcement model of achievement motivation.

This group of theories explains which conditions, strategies, and mechanisms foster the realization of the chosen goals.

According to Heckhausen and Heckhausen (2007), the most prominent German motivation researchers, achievement motivation is the best investigated form of human motivation. Heinz Heckhausen did a great input into the research on achievement motivation in the German-speaking area. His major research focus was on the distinction of the achievement motive into fear-of-failure (FF) and hope-of-success (HS) motive.

Brunstein and Heckhausen (2007) perceive HS-motivated people as those who aim at “enhancing their efficiency, gaining new competencies, and continuously improving their skills in particular fields of activity” (p. 179, own translation). On the other hand, the primary

goal of the FF-motivated individuals is “to reduce the pressure of the self-worth or, if possible, to avoid it at all. Their actions are aimed at the protection of the self-worth, not the self-improvement” (Brunstein & Heckhausen, 2007, p. 181, own translation).

One of the Heckhausen’s major contributions to the achievement motive research was the development of a new scoring key for the analysis of stories written to the TAT (Heckhausen, 1963). This scoring key enabled the measurement of two dimensions of the achievement motive—HS and FF. He used the picture-story format but developed a slightly different coding system for *n* Achievement that yielded four separate measures: HS, FF, the difference between the two (HS-FF, or the Net Hope score), and the sum of HS + FF.

The second major contribution by Heckhausen was the construction of the self-reinforcement model of achievement motivation (e.g., Heckhausen, 1974, 1975; Brunstein & Heckhausen, 2007). This model incorporated several theories— affective basis of achievement-related behavior, the risk-choice model by Atkinson, and the attributional theory by Weiner. The central points of the model are:

1. Emotions, such as pride or shame, are central for hope for success or fear of failure, and determine future achievement-oriented behavior.
2. Choice of tasks from Atkinson’s model.
3. Attributional styles from Weiner’s model.

So the self-reinforcement model explains that success-motivated individuals have a goal of enhancing their competency and choose tasks of medium difficulty. When they experience success, they attribute it to their own abilities or efforts which result in strong positive emotions like pride. When they fail at tasks, they attribute failures to the lack of efforts which end up in negative emotions but do not change their feeling of self-worth. This process has a cumulative effect, whereas each new success fosters the further choice of achievement-related tasks and each new failure makes the person try harder and put more efforts into the task accomplishment.

Failure-motivated individuals have a goal of reducing the self-worth pressure, they fear failure and, thus, choose easy or very difficult tasks. When they succeed at easy tasks, they attribute it to the easiness of the task, while success at a very difficult task is attributed to the chance. When they fail at easy tasks, they attribute it to the lack of abilities, while failure at difficult tasks is attributed to the task difficulty. As a result, pursuit of easy tasks leads to slightly positive emotions, such as relief, while occupation with very difficult tasks excites negative emotions, such as shame. In this circle, each new failure or success has a stabilizing effect, and failure-motivation is reinforced with the negative consequences for performance and health.

This model also has a practical relevance because according to it, achievement motive as a variable is not stable and, thus, can be taught and modified. It perceives a motive as a self-reinforcing system, whereas a motive provides the individual with the possibility to condition his own self-reinforcements. Heckhausen (1975) came to a conclusion that “with theoretically guided interventions aimed at crucial intervening cognitions, it seems possible to break up the unhappy self-prescriptive contingencies by which a fear-of-failure person reinforces his own fear of failure” (p. 126).

CHAPTER 3. ACHIEVEMENT MOTIVATION —IMPLICIT VERSUS EXPLICIT

3.1. How Implicit and Explicit Motives Were Discovered

For the measurement of the achievement motive in the German-speaking area we can find a range of different diagnostic tools which are either developed in the tradition of the TAT or structured as questionnaires.

From the beginning of the development of the TAT-based measure and the scoring key by McClelland et al. (1953), a lot of interest was drawn to studying the two types of measurement together and trying to get some meaningful correlations between them. And already in the first study comparing the validity of fantasy-based and self-report measures of the need to achieve, deCharms, Morrison, Reitman, and McClelland (1955) not only demonstrated that both types of measures shared no significant variance overlap but also predicted different kinds of phenomena.

Many researchers since then tried to get some significant correlation between the two measures or at least try to find some moderators of their discrepancy. All these studies proved that correlations between TAT-based measures and self-report questionnaires which assess the same achievement construct are normally very low and actually not to be expected.

Some examples of correlation coefficients between the TAT-based and self-report measures of the achievement motive are:

- TAT and Need for Achievement scale from Personality Research Form (PRF [Jackson, 1967]), or Deutsche Personality Research Form (D-PRF [Stumpf, Angleitner, Wieck, Jackson, & Beloch-Till, 1985]):
 $r(96) = .05, .02, .00, ns$ in Brunstein and Maier (2005);

$r(72) = .23^*$, $p < .05$ in Emmons and McAdams (1991);

$r(101) = -.05$, *ns* in King (1995);

$r(323) = .02$, *ns* in Pang and Schultheiss (2005);

$r(195) = .06$, *ns* in Schultheiss and Brunstein (2001);

$r(190) = .08$, *ns* in Schultheiss, Yankova, Dirlikov, and Schad (2009);

$r(167) = .22^{**}$, $p < .01$ in Thrash and Elliot (2002);

$r(249) = .02$, *ns* in Woike (1995).

- TAT and other self-report measures of the achievement motive:

$r(74) = -.07$, *ns* and $r(57) = .20$, *ns* (TAT and Edwards Personal Preference Schedule [EPPS by Edwards, 1959] in Biernat, 1989);

$r(88) = .08$, *ns* (TAT and Personal Value Questionnaire [PVQ by McClelland, 1991] in Brunstein and Hoyer, 2002);

$r(120) = .17$, *ns* (TAT and Fragebogen zur Erfassung von Lebenszielen [GOALS by Pöhlmann & Brunstein, 1997] in Hofer and Chasiotis, 2003);

$r(72) = .04$, *ns* (TAT and PVQ [McClelland, 1991] in Langens, 2007);

$r = .09$, *ns* (metaanalysis of 105 articles in Spangler, 1992);

$r = .07$, *ns* (four different self-report measures of the need for achievement in Thrash, Elliot, and Schultheiss, 2007).

Consistently low or even negative correlation between the achievement motive measured with questionnaires and TAT-based measures inspired lots of discussions and controversial arguments about the reasons for such a discrepancy. The most often discussed reason at first was that fantasy-based measures do not satisfy the psychometric properties of a good measure (e.g., Entwisle, 1972; Fineman, 1977).

But McClelland and his colleagues introduced the idea that self-report questionnaires and TAT-based measures assess two qualitatively different kinds of human motives: implicit and explicit (McClelland et al., 1989). They have different developmental histories (are

determined by different genetic and social factors), are activated by different kinds of incentives, and predict different patterns of behavior. For one, these authors coined the term *implicit motive* to denote nonconscious motivational needs assessed through indirect means, such as the TAT, and contrasted it with the term *explicit motive*, which denoted the motivational needs and strivings that people consciously ascribe to themselves.

Another development done by McClelland et al. (1989) was a change in terminology and the switch from the TAT to Picture Story Exercise (PSE) as the official name for the picture story methods commonly used to assess implicit motives. The change reflected the fact that original TAT stimuli by Murray (1938) were rarely used by motivational researchers. The administration procedure and content-coding systems for scoring the stories also underwent a lot of changes, so this terminology change was reasonable.

The revolutionary ideas by McClelland et al. (1989) stimulated extensive research in this area, which proved that implicit and explicit motives are two distinct systems. And different people possess them in different degrees. People sometimes strive for goals that are congruent with their implicit motives, whereas at other times they are committed to goals that are incongruent with respect to their implicit motive disposition (for example, a person with a low implicit power motive working on a career for a leadership position and thus striving for a power goal). Logically we will never manage to predict the correlation in a group of randomly gathered people.

Before we have a closer look at particular measures of the achievement motive, it is important to get a clear understanding of the distinction between implicit and explicit motives.

3.2. Difference Between Implicit and Explicit Motives

3.2.1. Main terms.

To start with, implicit versus explicit motives were differently termed throughout the history of their research:

- *need* or need to achieve *n* Achievement, versus *value* or valuing achievement *v* Achievement (deCharms et al., 1955);
- *operants* versus *respondents* (McClelland, 1980);
- implicit achievement motive *n* Achievement versus self-attributed achievement motive *san* Achievement (McClelland et al., 1989);
- implicit *motives* versus explicit *goals* (e.g., Schultheiss & Brunstein, 1999).

In this paper we will be following the abbreviation used by deCharms et al. (1955).

Following McClelland, the difference between implicit and explicit motives was researched and covered by many authors: Brunstein (2003, 2007), Brunstein and Heckhausen (2007), Schmalt and Sokolowski (2000), Schultheiss (2008), Schultheiss and Brunstein (1999, 2005, 2010a), Schultheiss and Pang (2007), Spangler (1992), Woike, Mcleod, and Goggin (2003), and so forth.

Brunstein and Heckhausen (2007) define implicit achievement motivation as an autonomous form of achievement behavior, when a person strives to experience feelings of pride and satisfaction accomplishing tasks of medium difficulty and acquiring competency. Koestner and McClelland (1990) propose that the primary goal of the implicit achievement motive is to improve one's skills and accomplish tasks more effectively. This form of achievement motivation is associated with feelings of interest and surprise. Once engaged in an activity, this intrinsic form of achievement motivation is primarily guided by self-reactions

(e.g, feelings of satisfaction as one accomplishes, or anticipates accomplishing, the task successfully).

So *n* Achievers are concerned with personal standards of excellence and intensify their efforts if they perceive that they fail to meet their previous accomplishments. They compete with their own norms and prefer to live up to their own internal standards (Brunstein & Maier, 2005).

Explicit motivation is a competitive form of achievement behavior with a goal to preserve the self-concept of one's own talent by deciding for or against achievement tasks and demonstrate it to other people (Brunstein & Heckhausen, 2007). The primary goal by the involvement of explicit motivation is to behave in a competent manner as defined by the particular situation or as accepted as a part of the person's self-image. Rather than cherishing the process of performing an activity, people high in explicit achievement motivation behave as they believe they are supposed to. This form of achievement motivation is often associated with feelings of pressure and tension. Once engaged in an activity, it is primarily guided by social reactions—feelings of pride when one is recognized for one's accomplishments and of shame if recognition is not forthcoming (Koestner & McClelland, 1990).

So people with high explicit achievement orientation obviously perceive themselves or would like to be highly achievement-oriented (Langens et al., 2005). Explicit achievement motive is strongly correlated with the self-concept of your own abilities. It means that people with high explicit achievement motive do not necessarily have a need to bring out good performance but are just anxious to appear to be competent in one's own eyes and the eyes of the others. The goal of such people is to produce high achievement in order to outperform other people and satisfy challenging standards of excellence (Langens, 2005).

Summarizing the results of different studies we can come to the conclusion that the distinction between two types of motives, first introduced by McClelland et al. (1989), is real

and determined by different developmental histories, activation by different incentives, and prediction of different types of behavior.

3.2.2. Different developmental histories.

Implicit motives, or needs, are nonconscious, emotion-driven and genetically determined (Schmalt & Sokolowski, 2000; Schultheiss & Brunstein, 1999, etc.). They develop early in life as a result of experience with various incentives and do not require presence of language for their development (McClelland et al., 1989; Schultheiss & Brunstein, 1999; Spangler, 1992, etc.). People high in *n* Achievement may not necessarily know about it and cannot accurately report on the strength of their motives (Biernat, 1989). Implicit motives are like semantic memory: They automatically influence behavior without conscious effort, like rules that guide behaviors. They operate outside of a person's conscious awareness and therefore have to be assessed indirectly, such as by content-coding of verbal material (Schultheiss, Strasser, Rösch, Kordik, & Graham, in press).

Implicit need for achievement is associated with setting high standards early in life for moderately difficult mastery of internal states, such as scheduling of feeding and severity of toilet training (McClelland et al., 1989). Research done by McClelland and Pilon (1983), and McClelland and Franz (1992) examined the sources of adult implicit motives in the parent behavior in early childhood.

First, ratings based on mothers' reports of child-rearing practices obtained in 1951 when their children were five years old were correlated with the motive scores obtained from 78 of the children 26-27 years later. Scheduling of feeding and severity of toilet training were significantly associated with the adult implicit need for achievement (McClelland & Pilon, 1983).

Then, in 1987-1988 a sample of the same population was studied 10 years later so that it was possible to examine whether higher motivation levels at age 31 (and the parenting styles associated with them) led to different life outcomes at age 41 (McClelland & Franz, 1992). As predicted, *n* Achievement level in early adulthood was significantly associated with earned income in later adulthood. Furthermore, achievement pressure connected with feeding and toileting in the first two years of life led to higher levels of *n* Achievement at age 31 ($r(46) = .36^*$, $p < .05$), and higher levels of earned income at age 41 ($r(80) = .26^*$, $p < .05$).

On the other hand, explicit motives or values, are consciously accessible and attached to the cognitive system (Schmalt & Sokolowski, 2000; Schultheiss & Brunstein, 1999). They develop later in life, require presence of language, and come from understanding of social incentives (Spangler, 1992). They are based on social learning and explicit teaching by parents and others, and are relatively conscious perceptions of what is important to the individual and what is valued by individual's culture, thus, are tied to the self-concept (Schmalt & Sokolowski, 2000; Spangler, 1992). The self-concept represents an individual's mental image or perception of the self, encompassing the temporally stable self-knowledge of this particular individual, including her or his attitudes, affective preferences, values, goals, and life story (Schultheiss et al., in press).

Explicit motives can influence self-conscious behavioral choices and evaluations of other people. They are more easily influenced by expert authority and form more negative impressions of persons described as unsuccessful (Biernat, 1989). Contrary to implicit motives, they are verbally represented and measureable by self-report.

Interesting research done by Woike and colleagues (Woike, 1995; Woike et al., 2003) investigated how implicit and explicit motives differ in terms of their connection with the memory. In a study of 1995 it was proved that when self-conceptions and well-articulated values which corresponded to explicit motives, were made salient, participants recalled more content-specific routine most-memorable experiences. But when specific affective states

which corresponded to implicit motives, were made salient, participants recalled more domain-specific affective most-memorable experiences.

In the further research, Woike et al. (2003) studied how implicit and explicit motives related to the autobiographical knowledge. Those who wrote about an emotional experience with an achievement theme, had higher levels of implicit need for achievement, and those who wrote about a self-descriptive experience, had higher levels of explicit need for achievement. Implicit achievement scores were also higher for those who recalled a specific memory, and explicit achievement scores were higher for those who recalled general events.

Thus, the distinction between implicit and explicit need for achievement was clear and indicated that while implicit motives are linked to the accessibility of specific and emotionally involving experiences, explicit motives are linked to specific and general memories that correspond to the conscious representation of the self.

3.2.3. Activation by different incentives.

It is important to say that motives predict behavior only in the presence of appropriate incentives. If there are no achievement incentives in the given research or work situation, there is no reason to believe that achievement-oriented individuals will behave differently from those low in the achievement motive (Spangler, 1992).

Research indicates that implicit motives are activated by natural stimuli, such as activity incentives or characteristics of a task itself (Langens, 2005; McClelland et al., 1989; Schmalt & Sokolowski, 2000; Schultheiss & Brunstein, 2005). They are aroused by environmental cues that signal the availability of a rewarding emotion (Schultheiss & Brunstein, 1999).

Examples of achievement activity incentives can be moderate task risk, task contingency, achievement work content, time pressure, high objective relationship between

performance and some achievement-related outcome, and opportunity to do something better, quicker, or more effective (Brunstein, 2007; Spangler, 1992). On the other hand, people with a high implicit need for achievement do not perform better when pressured externally or when outcomes are due to chance. Monetary rewards are also not an incentive for them, but they help to get information about how well they are doing (McClelland & Koestner, 1992).

On the other hand, explicit motives are activated by social appeals and incentives, such as rewards, prompts, expectations, demands, and norms that come from outside the task itself (Langens, 2005; McClelland et al., 1989; Schmalt & Sokolowski, 2000). Examples of social achievement incentives can be challenging goals set by experimenter, achievement-oriented instructions in an experiment, achievement work norms, time assessment, or competition pressure (Brunstein, 2007; Spangler, 1992).

Several other studies corroborated the importance of the interaction between motives, incentives, and behavior.

For example, Koestner, Weinberger, and McClelland (1991) designed two experiments to show that the two kinds of motives are unrelated to one another and aroused by different factors in a performance situation. It was hypothesized that motives as assessed from fantasy (seen as implicit needs) are primarily aroused by factors intrinsic to the process of performing an activity, whereas motives obtained through self-report inventories (seen as self-attributed needs) are aroused by social factors that are extrinsic to the process of performing an activity (e.g., the way in which a task is presented by an experimenter).

As expected, when a memory task was introduced with an explicit emphasis on achievement, subjects high in self-attributed need for achievement performed better than those who were low, whereas in a neutral condition the reverse pattern was obtained. Importantly, it was shown that the implicit need for achievement did not interact with the social cue regarding achievement to facilitate performance. The implicit achievement motive was shown to influence the relation of task difficulty to performance on word-finding puzzles.

High fantasy achievement motivation subjects performed relatively better on the more difficult puzzles, whereas low fantasy achievement motivation subjects performed relatively better on the easier ones.

In the further research, by Brunstein and Maier (2005) (see also, Brunstein & Hoyer, 2002), 96 students first completed a PSE measure of the implicit need for achievement and a questionnaire measure of the explicit achievement motive and then worked on a mental concentration task that required them to respond as quickly as possible to various stimuli presented on a computer screen. After each block of stimulus presentations, they received graphical feedback about their performance (a) relative to their performance on a previous block (self-referenced feedback), and (b) relative to the performance of previous participants (norm-referenced feedback). The authors predicted and found that participants with a high implicit achievement motive, relative to those low in this motive, responded to task performance feedback (task-intrinsic incentive) by increasing actual performance on an attention task. Participants with a high explicit achievement motive, in contrast, responded to information about how well they were doing in comparison with other participants (social-extrinsic incentive) by choosing whether to continue the task or to do something else.

An extensive research on the measurement of the achievement motive with the help of different measurement techniques was done by Ziegler, Schmukle, Egloff, and Bühner (2010). The study aimed at exploring whether implicit and explicit measures represent two different common constructs, and analyzing in how far criterion validities differ with regard to different situations while controlling for the constructs of intelligence and Big Five. One hundred and fifty participants worked on three different measures of the implicit achievement motive: PSE, Implicit Association Test (IAT [Brunstein & Schmitt, 2004]) and Objektiver Leistungsmotivations Test (OLMT [Schmidt-Atzert, 2004]). Explicit achievement motive was assessed with two self-report questionnaires: Achievement Motives Scale Revised (AMS-R [Lang & Fries, 2006]) and the Conscientiousness Facet Achievement Striving (AS) from the

NEO Persönlichkeitsinventar (NEO-PI-R [Ostendorf & Angleitner, 2006]). The whole NEO-PI-R was also administered, as well as Intelligence Structure Test 2000 R (I-S-T 2000 R [Amthauer, Brocke, Liepmann, & Beauducel, 2001]).

Approximately six weeks after testing the students participated in a trial exam which established a task-oriented setting combined with the performance feedback, which aimed at eliciting the implicit achievement motive. The norm-referenced feedback, which should elicit the explicit achievement motive, was also given. Ten weeks later, the students took the real statistics examination, where the ego involvement should be high.

The results proved that in terms of constructs, explicit achievement motive measures can be combined into one latent variable, regardless of the different underlying constructs. This result was not found for the implicit achievement motive measures, which shows that each used different measurement approach. As far as prediction of performance is concerned, in a task-focused setting with self-referenced feedback, the PSE predicted performance at a trial exam, as expected. The correlation between PSE and the trial exam grade was significant ($r = .22^*$, $p < .05$). Given norm-referenced feedback and ego-involvement, Hope for Success and Fear of Failure scales of the AMS-R were significant predictors of performance at real exam. Correlations between the scales and the real exam grade were $r = .16^*$, $p < .05$, and $r = -.16^*$, $p < .05$, respectively.

3.2.4. Prediction of different types of behavior.

Extensive research on the predictive validity of the implicit need for achievement indicates that implicit motives foresay long-term spontaneous behavioral trends over time, such as entrepreneurial success or career success (e.g., McClelland et al., 1989; Schmalt & Sokolowski, 2000). Such behavior which subjects generate spontaneously is called operant behavior (McClelland, 1980). Operant behaviors are qualitative responses which are not tied

to or caused by detectable external stimuli; they are seemingly spontaneous in nature. Thus, operant tasks allow for innovation and variability in response, and are characterized by persistence and self-motivation which are important for good performance.

On the other hand, explicit need for achievement can help foresay an immediate and situation-specific behavior, such as learning performance in a laboratory situation. Explicit need for achievement is also normally highly correlated with the academic performance criteria, such as grades (e.g., McClelland, 1980; McClelland et al., 1989; Robbins et al., 2004; Schmalt & Sokolowski, 2000). Such behavior which is controlled by characteristics of the subject's environment (school grades) is called respondent behavior. Respondent behaviors are related to specific eliciting stimuli. Thus, respondent tasks involve short-term choices, simply completed on command, and include a limited range of response alternatives.

Explicit measurement techniques predict cognitive preferences and choice decisions. For example, the explicit achievement motive can help predict if a person will decide to take up an achievement task and work on it in situations with clearly defined performance expectations. For example, such people possess desire to compete and are likely to participate in different competitions (Dahme, Jungnickel, & Rathje, 1993). But it does not predict how much energy and efforts will be invested into the task implementation (Langens, 2005). In comparison, high implicit achievement motive can help predict a good performance outcome, if their possessors choose to participate in competitions (Dahme et al., 1993).

Finally, implicit motives provide a general orientation toward certain types of goals but give a poor indication of the area in life in which a person will strive to do better or to be entrepreneurial. Explicit motives have no predictive validity over time and reflect social norms that define more narrowly the areas in which those goals are to be accomplished. They show the direction in which the implicit achievement motive will turn and are determined in part by what is considered important in the group to which this or that person belongs (McClelland et al., 1989).

3.2.4.1. Predictive validity of the implicit need for achievement.

To start with, McClelland and his colleagues (McClelland, 1985a; McClelland et al., 1989; McClelland & Koestner, 1992) were the first to argue that people who are high in *n* Achievement are characterized by the three main attributes:

- moderate risk-taking preference;
- personal responsibility for decisions and performance;
- an interest in concrete knowledge of the results of decisions or need for performance feedback.

McClelland (1985a) explained that if the incentive was to do better, neither a very easy task nor a very difficult one provided an opportunity to do better. If the task is easy, there is no question of doing it better, since anyone can do it. If it is very difficult, there is also no question of doing it better, because everyone is likely to fail in attempting it. Other researchers (Atkinson, 1966; Weiner, 1980) also supported this view, but gave different explanations for the choice of moderately difficult tasks (see Chapter 2). In general, *n* Achievers prefer moderately difficult tasks defined in various ways, such as choosing moderately difficult college majors or aspiring to moderately difficult vocations (Atkinson, 1966; McClelland, 1985b; McClelland & Koestner, 1992; Schultheiss & Brunstein, 2005).

The second characteristic of high *n* Achievers is that they derive satisfaction from doing something better only if they feel responsible for a performance outcome under conditions that emphasize individual problem-solving. They prefer personal responsibility for performance and tasks that under their direct control (McClelland & Koestner, 1992; Schultheiss & Brunstein, 2005). The theoretical support for the need for the performance feedback of the people with a high implicit need for achievement was also found (e.g., Brunstein & Hoyer, 2002; Brunstein & Maier, 2005).

McClelland and his colleagues were also the first researchers who suggested that the achievement motive measured with the help of the TAT is a key to entrepreneurial behavior.

The studies done in this direction investigated three separate issues, stating that (1) *n* Achievement predicts entrepreneurial choice and success (McClelland, 1965; McClelland, 1985a; McClelland & Koestner, 1992), (2) *n* Achievement can be trained and, then, it improves business performance (McClelland, 1985a; McClelland & Winter, 1971; Miron & McClelland, 1979), and (3) entrepreneurs should possess high *n* Achievement and low *n* Power as opposed to managers (McClelland & Boyatzis, 1982; McClelland & Burnham, 1982).

One of the first attempts to predict entrepreneurial behavior was done in 1965, when McClelland analyzed the occupational position of 55 Wesleyan graduates some 14 years after graduation. The results indicated that 83% of the entrepreneurs in business had been high in *n* Achievement as college sophomores, whereas 79% of the nonentrepreneurs in business had been low in *n* Achievement. A cross-validation study of students of the classes of 1954 and 1955 confirmed the finding that males with high *n* Achievement gravitated toward business occupations of an entrepreneurial nature, where they can better satisfy their achievement aspirations, according to theoretical expectations.

High *n* Achievement should make people likely to do well in small business because business requires that people take moderate risks, assume personal responsibility for their own performance, pay close attention to feedback in terms of costs and profits, and find new or innovative ways to make a new product or provide a new service (McClelland, 1985a).

Another line of research was dedicated to the improvement of business performance through the need for achievement (McClelland & Winter, 1971; Miron & McClelland, 1979). These studies confirmed that training courses designed for the development of the achievement motive improved small business performance significantly in terms of increased sales, profits, and numbers employed.

The achievement motivation training designed and applied by McClelland and Winter (1971) served a double purpose. First, it aimed at improving economic development in some

Indian towns, and, second, it was conceived of as an attempt to check the theory of achievement motivation in a field setting. Several Indian businessmen from different Indian cities were recruited for a two-week period of training with the goal of becoming more entrepreneurial. Several psychological variables were assessed at the beginning of the training including pretraining levels of the implicit achievement motive.

Two years after the achievement training courses had been conducted the actual level of business activity was assessed. The results indicated that businessmen in charge were much more likely to change after the training than those, not in charge. In addition, discrepancies between the actual and the ideal self were related to becoming active after the training for participants who were in charge of their business (McClelland & Winter, 1971). No such relationship was reported for participants who were not in charge of their business.

Another study done by Miron and McClelland (1979) added evidence that the training appears to be equally effective for business ranging in size from sales of as low as \$1000/month up to \$10-20,000/month. The type of business also did not seem to matter: The training appeared to be effective for manufacturing, retail, and service businesses.

Finally, McClelland and colleagues argued that entrepreneurs compared with, say, managers, should be high in the need for achievement and low in the need for power. Conversely, successful managers should be higher in the need for power and lower in the need for affiliation and achievement (McClelland & Boyatzis, 1982; McClelland & Burnham, 1976).

For example, McClelland and Boyatzis (1982) did a longitudinal study of 237 managers, from whom TAT protocols were obtained at the managers' entry into the American Telephone and Telegraph Company. The personality variables in question were scored and correlated with the levels of promotion attained after eight and 16 years. For managers in nontechnical jobs (145 participants or 61% of the managers in the sample), a positive association has shown at eight and 16 years after testing between the predicted leadership

motive pattern and subsequent promotion in the company. This means that senior managers in jobs that do not focus on the engineering aspects of the business who (a) are concerned about influencing others, (b) are less concerned about being liked, and (c) have a moderate to high degree of self-control, are more likely to succeed than other senior managers in jobs that do not focus on engineering. Among these managers, *n* Achievement was also associated with success, but only at lower levels, when individual contributions are more important than the ability to influence people.

To assess multiple dimensions of personality within the above-mentioned theoretical framework, Langan-Fox and Roth (1995) developed a typology of female entrepreneurs on the basis of psychological characteristics of 60 Australian female business founders. In this study, a number of projective and self-report measures were used. Analyses revealed three psychological types of female entrepreneurs: the managerial entrepreneur, the pragmatic entrepreneur, and the need achiever.

Cluster 1 was titled managerial entrepreneurs because the subjects had the lowest *n* Achievement score and very high levels of explicit need for power, influence and achievement—dominant traits of managers. Cluster 2 was called pragmatic entrepreneurs who appeared to be moderate on both implicit and explicit motives of achievement and power. This group of women seemed to be motivated by family concerns, such as opportunity to pass the business on to children, and expectations of earning more money in self-employment. They had practical, pragmatic, and economic reasons for entrepreneurship. Finally, Cluster 3 represented the pure need for achievement type with high levels of implicit need for achievement and the lowest levels of explicit need for achievement, power, and influence.

To summarize, the need achievement type constituted 25% of the sample, the low *n* Achievement type (managerial type) constituted 18.3% of the sample, and the pragmatists constituted 56.6% of the sample. Hence, two of the types (81.7% of the sample) had a

moderate to high *n* Achievement. Thus, McClelland's research on the importance of *n* Achievement for entrepreneurship was given firm support in this study.

A lot of other researchers also aimed at testing McClelland's hypotheses. Unfortunately, many of them used different self-report measures of the achievement motive, such as questionnaires, instead of the TAT-based measures. Thus, the results were sometimes contradictory.

For example, Hull, Bosley, and Udell (1980) aimed at identifying potential entrepreneurs by personality characteristics but used a questionnaire to measure *n* Achievement. It is not surprising that they came to the conclusion that *n* Achievement is a weak predictor of an individual's tendency to start a business.

Hornaday and Aboud (1971) also looked for objective ways of measuring *n* Achievement and empirically proved that the achievement motive measured with the achievement scales of the EPPS (Edwards, 1959) differentiated entrepreneurs from men in the standardization groups.

In a related vein, Sagie and Elizur (1999) sought to understand the predictive validity of the achievement motive. As hypothesized, small business students were found to score higher than their business and economics colleagues on most of the achievement items of the Achievement Motive Questionnaire (AMQ [Elizur, 1979; Shye, 1978]).

Stewart, Watson, Carland, and Carland (1999) did a survey of 767 small business owner-managers and corporate managers. The results indicated that those owner-managers labeled as entrepreneurs were higher in the achievement motive measured with the help of the achievement motive scale of the PRF (Jackson, 1967), risk-taking propensity, and preference for innovation, than were both the corporate managers and the small business owners. This profile of the entrepreneur as a driven, creative risk-taker was, thus, consistent with much of the classic literature concerning the entrepreneurship.

Another line of research addressed the issue of whether the achievement motive travels across countries and cultures.

For example, Utsch, Rauch, Rothfuss, and Frese (1999) investigated the differences between entrepreneurs and managers in East Germany. They measured the traits of autonomy, innovativeness, proactiveness, competitive aggressiveness, and achievement orientation with a questionnaire and were able to discriminate between entrepreneurs and managers on most of the variables, with the exception of proactiveness. They concluded that personality is important in founding a business.

Utsch and Rauch (2000) considered the effect of achievement orientation (measured again with seven items of a questionnaire) on venture performance. They demonstrated that profit growth and employee growth of a venture were shown to be a consequence of the impact of achievement orientation on the mediating variables, with innovative behavior being the stronger link to performance outcome.

Lee and Tsang (2001) focused their attention on demonstrating the extent to which need for achievement (measured with the EPPS [Edwards, 1959]) is associated with venture growth among Chinese entrepreneurs. The authors concluded that need for achievement is the personality factor that has the greatest impact on venture performance. But they also suggested that, given the importance of experience, there is a need to shift attention from entrepreneurial traits to entrepreneurial skills.

Rarely, attempts were made to make use of both types of the achievement motive assessment to examine the predictive validity of the TAT over questionnaires, as hypothesized by McClelland and colleagues.

For example, Johnson (1990) reviewed 23 studies, selecting eight different measures of the achievement motive (one of them being the TAT). A positive relationship between the achievement motive and entrepreneurship was found in 20 of the 23 studies reviewed.

The most famous research carried out to investigate both TAT and questionnaire-based measures of the achievement motive was done by Spangler (1992). To test the competing claims of McClelland and associates, and those of critics of TAT-based measures of the achievement motive, 105 empirical studies using either TAT or questionnaire measures, or both, were content analyzed to provide data for two separate metaanalyses. In the first metaanalysis, the dependent variable was the achievement motive-outcome correlation. Independent variables in the first metaanalysis included type of motive measure (questionnaire, TAT), the number of activity incentives in the situation, and the number of social achievement incentives in the situation. Outcomes were classified as respondent (e.g., attitudes, opinions, school outcomes, ability, and achievement tests), semi-operant (laboratory measures of performance), or operant (e.g., income earned, occupational success, naturally occurring social behavior). The second metaanalysis tested the correlations between the TAT and questionnaire measures of the achievement motive.

The results advocated the predictive validity of the TAT measure, proving that the average correlation between TAT achievement and outcomes was higher than the average correlation between questionnaire achievement and outcomes for respondent, semi-operant, and operant outcomes. Thus, results of the investigation supported the distinction made by McClelland and his associates (McClelland et al., 1989). TATs and questionnaires appeared to be measuring different aspects of personality and the TAT demonstrated a better predictive validity of operant outcomes.

Further statistical analysis indicated that neither questionnaires nor the TAT predicted achievement behavior well in respondent situations in the absence of appropriate incentives. The expected correlation between questionnaire achievement and real-world (i.e., operant) behavior in the presence of four social achievement incentives and no activity incentives was .35. The expected correlation between TAT achievement and operant outcomes in the

presence of four activity incentives and no social incentives was .66. In short, the TAT in the presence of activity incentives predicted operant behavior extraordinarily well.

Hansemark (2003) investigated the impact of *n* Achievement and Internal-External Locus of Control (I-ELOC) on entrepreneurial activity using a longitudinal design. The subjects were assessed using self-report (EPPS by Edwards, 1959) and projective (TAT) measures of the need for achievement, as well as the self-report measure of I-ELOC. The measurement was done 11 years prior to any entrepreneurial activity. Hansemark found that after 11 years a higher proportion of the experimental group (48%) had started a business, compared with 21% for the control group.

For all subjects, none of the personality measures predicted start-up activity. The author concluded that as regards *n* Achievement, most prior studies had been carried out on extant entrepreneurs. This suggested that personal characteristics might have been developed after or because of entrepreneurial activity, and, thus, *n* Achievement was not an important prerequisite or predictor of entrepreneurship. However, this conclusion is not new, as McClelland (1985a) also suggested that “despite the strong theoretical expectation that the achievement motive could be responsible for entrepreneurial success, it is possible that people develop high *n* Achievement because of the entrepreneurial requirements of the jobs in which they find themselves” (p. 255).

Finally, Collins, Hanges, and Locke (2004) metaanalysed 41 studies to test the degree of support for the achievement construct, the evidence for a relationship between achievement motivation and entrepreneurial performance and entrepreneurship career choice, and the validity of the various measuring instruments that have been used. The studies under analysis made use of different measure of the achievement motive—both projective and self-report questionnaires.

To start with, the authors found that there was no significant evidence to suggest that how the entrepreneur was defined made any difference to the relationship between the

achievement motive and entrepreneurial activity. Then, achievement motivation was significantly related to the choice of entrepreneurial career ($r = .21^{***}$, $p < .001$) and entrepreneurial performance ($r = .46^{**}$, $p < .01$, for known group studies). Achievement motivation was also shown to differentiate between entrepreneurs and nonmanagers in comparison to studies which sampled managers only. Contrary to expectations, achievement motivation was a better predictor of entrepreneurial performance than of entrepreneurial career choice.

The authors concluded that these results supported McClelland's theory in that achievement motivation is related to both occupational choice and performance in an entrepreneurial role. Achievement motivation appears to be an important characteristic of entrepreneurs. But they argued that need for achievement was not a better predictor of career choice, but of performance, and, thus, achievement motivation might be of practical use for differentiation between successful and unsuccessful entrepreneurs, and selection of entrepreneurs who would take advantage of entrepreneurial finance and other support.

The final result of the study was that the TAT showed no greater validity than other projective tests or self-report measures in predicting entrepreneurial performance or career choice. Still, the authors suggested that "practitioners may consider using both self-report and projective measures to assess achievement motivation" (Collins et al., 2004, p. 112). The question arises whether using multiple types of measures will yield greater total validity than using only one alone, and future studies should test this hypothesis.

3.2.4.2. Predictive validity of the extrinsic need for achievement.

The general line of research on the predictive validity of the explicit need for achievement follows the hypothesis that it is strongly correlated with the academic success, such as grades.

For example, one of the modern self-report questionnaires for the measurement of the achievement motive, Leistungsmotivationsinventar (LMI [Schuler & Prochaska, 2001]) proved to have a good predictive validity of the academic success (Trapmann, 2008; Trapmann et al., 2005; 2007). Schuler and Prochaska (2001) reported in the manual high correlations between final grades and different dimensions of the LMI: Compensatory Effort (.30), Competitiveness (.29), Pride in Productivity (.26), Self-Control (.26), Eagerness to Learn (.24), and Fearlessness (.24).

In general, correlation coefficients between the achievement motive measured with self-report questionnaires and different academic success criteria lie in the range up to .40 (Trapmann, 2008).

For example, the study carried out by Busato et al. (2000) was directed towards an integration of intellectual ability, learning style, personality, and achievement motivation. Research question was how these variables relate to academic success in higher education. In a sample of 409 first-year psychology students, the authors measured the explicit achievement motive with the help of Leistungsmotivationstest (L-M-T [Hermans, Petermann, and Zielinski, 1978]). Academic success in this sample was operationalised as the amount of study points gained at the end of the respective first, second, and third academic year. Also, the grade for the very first examination (Introduction in Psychology) was taken as a measure of academic success.

Consistent with the expectations, the extrinsic achievement motive correlated positively with all the four variables of academic success: $r = .0.16^{***}$, $p < .001$ with academic success after the first year of study; $r = .0.17^{***}$, $p < .001$ with academic success after two years of studies; $r = .0.12^{***}$, $p < .001$ with academic success after three years of studies; and $r = .0.14^{***}$, $p < .001$ with the first examination.

In the related vein, Robbins et al. (2004) examined the relationship between psychological and study skill factors (PSF) and college outcomes by metaanalyzing 109

studies. The PSFs were categorized into nine broad constructs: achievement motivation, academic goals, institutional commitment, perceived social support, social involvement, academic self-efficacy, general self-concept, academic-related skills, and contextual influences. Two college outcomes were targeted: performance (GPA) and persistence. The authors found out that extrinsic achievement motivation was the second highest predictor (after academic self-efficacy) of the GPA, with an operational validity of .26 and a true-score correlation of .30. Thus, extrinsic achievement motivation proved to be one of the strongest predictors of the GPA.

Schmidt-Atzert (2005) came to the same conclusion in the analysis of a group of psychology students ($N = 106$). Final school exam grade was significantly correlated with the academic success in the undergraduate course of studies ($r(78) = .37^{**}, p < .01$). The extrinsic achievement motive, measured with the help of OLMT (Schmidt-Atzert, 2004), was also significantly correlated with the university grades and length of studies ($r(59) = -.24^*, p < .05$). Unexpectedly, intelligence tests proved to have no predictive validity. The correlation between three subtests of the Berliner Intelligenzstruktur-Test (BIS-Test [Jäger, Süß, & Beauducel, 1997]), and university grades was nonsignificant ($r(79) = -.07, ns$).

Trapmann et al. (2005) in a group of 822 students of different subjects studied the correlation between different cognitive, temperamental, and motivational predictors, and academic success criteria, such as grades, academic satisfaction, progress, and study behavior. The general results indicated that academic grades were at best predicted by a combination of school grades, higher intelligence, and a higher level of the extrinsic achievement motive. For example, in the group of students of the business sciences, the correlation between LMI dimension Preference for Difficult Tasks and intermediate examination grade was $r(254) = -.53^{**}, p < .01$, between Eagerness to Learn and intermediate examination grade was $r(254) = -.31, ns$. These correlations were moderated by the quality of teaching and varied depending on the course of studies.

In the domain of the learning behavior, extrinsic achievement motivation alone predicted the choice of deep-oriented learning strategies ($n = 268, \beta = .40, R^2_{adj} = .15$). In the combination with the subject-specific interest and better teaching quality, it was still a significant predictor ($\beta = .30, R^2_{adj} = .20$).

In a later research, Trapmann et al. (2007) again investigated multidimensional predictors of the academic success, such as school grades, numeral / verbal processing abilities, creative thinking, achievement motivation, interests, personality, person-environment-fit, and learning strategies. Academic success criteria were also multidimensional, such as final degree, grades, length of studies, satisfaction, university citizenship behavior, task performance, personal maturity, and inclination to drop out or change the course of studies.

Students of different subjects and in different semesters at the University of Hohenheim participated in the study at two time points: in 2005 (gathering of predictors) and 2007 (gathering of criteria). Again academic grades were most significantly correlated with the school grades and extrinsic achievement motivation. On the level of dimensions, different facets of the LMI correlated with different academic success criteria: for example, Engagement with academic grades, Flow with satisfaction with content of the studies, Confidence in Success with satisfaction with the stress-coping, Eagerness to Learn with learning behavior by task performance, and so forth.

Finally, Trapmann (2008) carried out a multidimensional research which considered seven groups of possible predictors of the academic success: academic grades, cognitive abilities, personality variables, extrinsic achievement motivation, interests, indicators of the person-environment-fit, and learning strategies. Academic success was measured multidimensionally and ranged from totally traditional criteria, such as academic grades, drop-out, and length of studies, to less investigated criteria, such as learning satisfaction, task performance, university citizenship behavior, and personal maturity. Extrinsic achievement

motive was measured with the help of the LMI (Schuler & Prochaska, 2001), and, as expected, different dimensions of the inventory demonstrated a broad predicting validity. Significant correlations were obtained between the extrinsic achievement motive and academic grades ($R(262) = .29$ between LMI general score and GPA, $r(262) = -.15^{**}$, $p < .01$ between Dominance scale and GPA, $r(262) = -.16^{**}$, $p < .01$ between Status Orientation scale and GPA), as well as, for example, between such criteria as learning satisfaction ($R(140) = .52$ between LMI general score and learning satisfaction, $r(140) = .40^{**}$, $p < .01$ with Flow scale, $r(140) = .40^{**}$, $p < .01$ with Confidence in Success scale) and personal maturity ($R(140) = .63$ between LMI general score and personal maturity, $r(140) = .51^{**}$, $p < .01$ with Fearlessness scale, $r(140) = .46^{**}$, $p < .01$ with Preference for Difficult Tasks scale).

It is important to explain why GPA is often chosen as an important criterion of the academic success. Many empirical studies account for a good predictive validity of the school grades for the later academic success providing correlations of about .40 (e.g., Schmidt-Atzert, 2005; Steyer, Yousfi, & Würfel, 2005), while the final school exam grade is considered to be the most valid single predictor of the academic success (e.g., Brandstätter & Farthofer, 2002; Gold & Souvignier, 2005; Schmidt-Atzert, 2005).

Steyer et al. (2005) conducted a study to check for correlation between school and university grades for the students of psychology degree program. The results indicated that the final school exam grade correlated significantly with the overall grades in both the undergraduate ($r = .39^{**}$, $p < .01$) and graduate course of studies ($r = .28^{**}$, $p < .01$).

In the German-speaking area, Trapmann, Hell, Weigand, and Schuler (2007) conducted a metaanalysis to investigate the relationship between school grades and university grades. The analysis included studies from five European countries, published since 1980 till 2005. GPA and individual subject grades were accepted as predictors, and the academic success was measured in terms of university grades in all courses of studies. The highest validity was demonstrated by the German GPA.

Finally, other academic success criteria also proved to be correlated with the extrinsic achievement motivation. For example, Giesen et al. (1986) analyzed how different academic and personality criteria predict academic success, particularly, grades and study satisfaction, in groups of university students of different study fields. Correlations between the extrinsic achievement motive and examination grades turned out to be significant, but moreover, the extrinsic achievement motive appeared to be of special importance for the prediction of academic satisfaction, the highest correlation obtained in the group of law students.

3.3. Interaction of Implicit and Explicit Motives

After discussing the differences between implicit and explicit need for achievement, it would be interesting to look at how these two systems interact, understand the reasons causing their congruence or discrepancy, and consequences of this interaction. Inconsistent findings and unpredictable correlations between two types of the achievement motive measurement suggest that the empirical relationship between implicit and explicit motives may depend on the sample considered: Some people may integrate implicit and explicit motives, whereas other may not. Some people closely observe their affective preferences and can gain access to their implicit needs, thus, adjusting their goals and enhancing the concordance between their implicit and explicit motives (e.g., Thrash, Cassidy, Maruskin, & Elliot, 2010).

McClelland et al. (1989) proposed that while implicit need for achievement provides a general orientation toward certain types of goals, explicit need reflects social norms which define more narrowly the areas in which those goals are to be accomplished. Brunstein and Hoyer (2002) came to the same conclusion that *n* Achievement provides the source of motivational energy for the actual development of competence, while *v* Achievement is more likely to serve the role of channel and determine in which domain a person will seek to

become competent. Shortly speaking, implicit need motivates, and explicit need channels goal-directed behavior (Schultheiss & Brunstein, 2005).

In a related vein, Rheinberg and Engeser (2010) suggested that whenever people choose to pursue a certain goal, their decision is based on their motivational self-concept. But how easy they then find it to engage in the necessary activities, and their quality of experience in doing so, depends on their implicit motives. The ideal configuration is the one in which individuals decide on goals and life projects that entail activities and situations which are in tune with their implicit motives.

To support the idea of the driving force of the implicit need for achievement, Langens (2001) reanalyzed the study done by McClelland and Winter (1971) which designed and applied the achievement motivation training among Indian businessmen. The results of the reanalysis showed that high self-discrepancy between real and ideal career activity made participants of the study be more active in choosing new entrepreneurial activity only in combination with a strong implicit need for achievement. Thus, only those participants who already possessed a strong implicit achievement motive became entrepreneurial, had a conscious need to increase their work competency, and profited from the training.

Contemporary conceptions of work motivation largely ignore implicit motives and the opposite nature of implicit and explicit motives. Thus, the theories that would explain the conflicts and distinctions between implicit and explicit motive systems have not yet been fully developed (Kehr, 2004b). Though, the revealed interest in the interaction of the two motivational systems has stimulated extensive research and offered interesting results (Baumann, Kaschel, & Kuhl, 2005; Brunstein, 2001, 2010; Brunstein, Schultheiss, & Grässmann, 1998; Deci & Ryan, 2000; Hofer & Chasiotis, 2003; Kehr, 2004a, 2004b; Langens, 2001; Langens & McClelland, 2007; Sheldon & Elliot, 1999; Sheldon & Kasser, 1995; Thrash et al., 2007; Thrash & Elliot, 2002, etc.).

3.3.1. Positive effects of implicit/explicit motive congruence.

Analyzing the cowork of implicit and explicit motives, we come to the conclusion that they are considered to be related in the sense that underlying motives lead to specific goals the people are aware of and which they can translate into elaborated plans. Implicit motives and extrinsic goals are closely interconnected to the extent that motives influence the formation of goals, while goals in turn instantiate motives and personalize individual needs according to the person's life context. But the transformation of broadly defined motives into more specific aims does not happen automatically. Some people may be able to generate goals that nicely fit their motives; others, however, are less successful in this respect. Thus, individuals may differ greatly with the respect to their ability of achieving a sense of harmony between what they consciously intend to do and what they nonconsciously would like to do.

Rheinberg (2002) called the capacity to make motive-congruent decisions *motivational competence* which means a person's ability to attune current and future situations to his or her activity preferences, so that he or she can function effectively, without the need for permanent volitional control. Rheinberg also singles out five main components of motivational competence:

1. An accurate motivational self-concept (congruence between one's implicit and explicit motives).
2. The ability to evaluate the potential incentives of future situations and, if necessary,
3. To furnish situations with motive-congruent incentives.
4. When working on long-term projects, a person high in motivational competence will consider both the benefits to be expected upon its completion and the pleasure to be derived from the activities themselves.

5. Metamotivational knowledge, that is, knowledge of the internal and external conditions which influence one's motivational processes.

Differing degrees of motivational congruence or motivational competence may be reflected in how people experience the affective quality of their lives (Brunstein, 2010).

Implicit/explicit motive incongruence is generally considered to be an undesirable condition. Thus, the general line of research on the interaction between two types of motives is based on the hypothesis that the motive discrepancy is associated with impaired well-being, whereas their correspondence should lead to elevated emotional well-being (Brunstein, Lautenschlager, Nawroth, Pöhlmann, & Schultheiss, 1995; Brunstein et al., 1998; Deci & Ryan, 2000; Hofer & Chasiotis, 2003; Kehr, 2004a, 2004b; Sheldon & Elliot, 1999; Sheldon & Kasser, 1995).

Indeed, there is ample evidence for positive effects of implicit/explicit motive congruence. For example, Brunstein et al. (1995) speculated that varying degrees of motivational congruence might be reflected in individual differences in affective experiences of emotional well-being. He hypothesized that people who are involved in goals that thematically correspond with their implicit preferences should display higher levels of well-being than individuals who are preoccupied with motive-incongruent concerns. Based on the distinction between agency and communion, he categorized motivational themes of power and achievement as agentic concerns, and classified affiliation- and intimacy-related concerns as communal strivings. The results proved that greater involvement in motive-congruent goals was generally associated with higher levels of well-being. For instance, among students with a strong communal motive, striving for communal-oriented goals was reflected in enhanced mood. Correspondingly, among students with a strong agentic motive, striving for agentic goals was positively related to well-being. Students who were strongly involved in goals that did not fit their motives reported relatively low levels of well-being.

In line with these predictions, Sheldon and Kasser (1995) related implicit/explicit motive congruence to health, well-being, and engagement in meaningful activities. The authors proposed that optimal psychological health and well-being occur when the different aspects of personality are integrated into a relatively harmonious whole. In terms of motives, integration means congruence which involves pursuing goals for self-determined reasons and being oriented toward goals that entail intrinsically satisfying activity, goals which connect with organismic needs. The studies proved that the congruence between extrinsic strivings and intrinsic needs was correlated with positive well-being outcomes, autonomous orientation, and engagement in meaningful activities. The authors came to the conclusion, that „integrated people...feel vital, satisfied with their lives, have a strong sense of self-esteem, are open to both their own experiences and the experiences of others, are relatively self-actualized, and experience more positive and fewer negative moods“ (Sheldon & Kasser, 1995, p. 541).

In a related approach, the self-concordance model by Sheldon and Elliot (1999) suggested that self-concordant goals (i.e., consistent with the person's developing interests and core values) positively influenced goal attainment and subsequent well-being. The three studies researched the relationship of goal attainment to changes in well-being, the moderating role self-concordance played in that relationship, and the relationship of need satisfaction to changes in well-being.

First, studies proved the idea that individuals do better at self-concordant goals because they put more sustained effort into such goals, and, thus, are more likely to achieve them. Goals that do not represent the interests and values of the true self may not receive sustained energization, despite the person's initially strong effort intentions, and even when attained, they do not satisfy important psychological needs. Second, those who attained self-concordant goals reaped greater well-being benefits from their attainment. Third, well-being effects were mediated by need satisfaction. It means that those who were progressing well in

their goals during a period of time, were accumulating experiences of competence, autonomy, and relatedness during that time, and even more so when their goals were self-concordant.

Likewise, Brunstein et al. (1998) proposed the goal–achievement–motive–satisfaction hypothesis which states that only in the domain of motive-congruent goals the interaction between goal commitment and goal attainability significantly accounted for students' change in emotional well-being over a semester. The students with high implicit needs for achievement (agency-motivated) experienced an increase in emotional well-being only if they pursued congruent agentic goals. Vice versa, high commitment to a motive-incongruent goal was a negative predictor of emotional well-being. The reasons for such interactions is that goals which are congruent with the person's implicit motives are furnished with incentives which give rise to affective experiences.

The authors of self-determination theory (SDT [Deci & Ryan, 2000]) also relate the implicit/explicit motive congruence to task enjoyment, mental health, and personal success, while opposite is true to their discrepancy.

Diverse studies of the SDT showed that the satisfaction of needs is linked directly to well-being. At the paradigm of intrinsic versus extrinsic needs, the results suggest that individuals may experience poorer well-being if they pursue and successfully attain goals with more extrinsic than intrinsic contents. STD emphasizes that pursuit of congruent intrinsic and extrinsic goals might be expected to yield greater basic psychological need satisfaction and is positively associated with mental health, whereas an emphasis on extrinsic goals, unrelated to basic needs, is negatively associated with mental health (Deci & Ryan, 2000).

Finally, Hofer and Chasiotis (2003) studied the same hypothesis, that is examined the relationship between conscious long-term goals, implicit motives, and an individual's satisfaction with life in a non-Western cultural context. The study of the Zambian sample ($N = 301$) showed that motive–goal congruence in the domains of achievement and affiliation were significantly related to greater levels of satisfaction with life. Thus, the implicit/explicit

interaction hypothesis can be applied universally, both in Western and non-Western cultural settings.

3.3.2. Moderating factors of implicit/explicit motive congruence and emotional well-being.

Still, there might be some unsuccessful attempts to demonstrate the above-discussed effect. For example, the study done by McAuley, Bond, and Ng (2004) did not find any relationship between implicit/explicit motive congruence and emotional well-being in a sample of working Hong-Kong adults. Thus, there might be factors which moderate the effect of the motive congruence on emotional well-being.

For example, Langens and McClelland (1997) in a study of 72 students of Boston University found significant gender differences. The authors hypothesized that congruence between strong implicit motive and explicit goals will lead to striving for goals which are associated with positive affect and elevated emotional well-being, while congruence between weak implicit need and explicit goal will be characterized by no goal striving and neither impaired nor elevated emotional well-being. Incongruent weak implicit motives and strong explicit goals will lead to striving for goals without gaining pleasure from doing so and impaired well-being, while incongruent strong implicit motives and weak explicit goals will also end up in impaired emotional well-being and lack of striving for goals which would give rise to positive affect.

As far as the achievement domain is concerned, the hypotheses were fully supported by the study for the male participants. For the female participants, the hypotheses were only partly supported. Females being low in both implicit and explicit achievement motivation reported the same level of emotional well-being as those with high levels of both motives. Also, in males, having an agentic motive orientation (dominance of achievement and power

over affiliation) was associated with elevated levels of emotional well-being, while the females reported higher emotional well-being when having a communal orientation (dominance of affiliation over achievement and power).

Langens (2007) also argued that congruence for itself may not be a sufficient condition for a better emotional well-being. Instead, a high level of activity inhibition may prevent positive affects of congruence to occur. Activity inhibition is conceptualized as a tendency to restrain motivational impulses, and, if the motivational impulses to engage in a rewarding activity are restrained, the congruence of implicit and explicit motives may not translate into higher emotional well-being. Thus, the author hypothesized that congruence between implicit and explicit motives is associated with better emotional well-being for individuals low in activity inhibition, but not for individuals high in activity inhibition.

In two studies, with different samples of participants (an American sample $N = 72$ and a German sample $N = 147$) and different measures of the explicit achievement motive, it was consistently found that (1) congruence of implicit and explicit achievement motives was related to emotional well-being among individuals low in activity inhibition, and (2) congruence effects were absent among individuals high in activity inhibition.

Finally, Langan-Fox, Sankey, and Canty (2009) addressed the issue of incongruence between implicit and explicit achievement motives, and psychological well-being by examining self-directedness, self-disclosure, and external locus of control (LOC) as potential moderators of the incongruence. Self-directedness refers to the ability of an individual to adapt, regulate, and control behavior to fit situations according to their chosen goals and values. Self-disclosure refers to individuals' verbal communication of personally relevant information, thoughts, and feelings in order to let themselves be known to others. Finally, locus of control is the extent to which people believe they have control over their own fate.

The predicted pattern of results demonstrated that relative to individuals who were congruent in their implicit and explicit achievement motives, the negative effects of motive

incongruence were reduced at higher levels of self-directedness and self-disclosure, and lower levels of external locus of control. Obviously, incongruent individuals' well-being was increased due to the mechanisms by which these traits reduce anxiety. In summary, these findings suggest that „personality development *may* reduce vulnerability to poor psychological well-being by decreasing anxiety caused by motive incongruence“ (Langan-Fox et al., 2009, p. 103).

Summing up the research on the interaction of two types of the motive systems, we can agree with McClelland in that „whatever the reasons for discordance between implicit and explicit motives, it can certainly lead to trouble“ (McClelland et al., 1989, p. 700).

3.3.3. Personality moderators of the implicit/explicit motive discrepancy.

In recent years, researchers have started searching for moderators of the relationship between implicit and explicit motives. These include the ability to quickly down-regulate negative affect (Baumann et al., 2005; Brunstein, 2001), volitional regulation (Kehr, 2004a, 2004b), self-determination (Thrash & Elliot, 2002), and private body consciousness, self-monitoring, and preference for consistency (Thrash et al., 2007). Going further, the research is carried out to identify the procedures which can help people to reduce the gap between implicit and explicit motives (Job & Brabdstätter, 2009; Rheinberg, 2002, 2004; Rheinberg & Engeser, 2010; Schultheiss & Brunstein, 1999).

3.3.3.1. *Action- versus state-orientation.*

Brunstein (2001) found out that one moderator of the implicit/explicit motive discrepancy is disposition of action- vs. state-orientation described by Kuhl (1998). Action-oriented people can form intentions, sustain, and implement them. Then can also deactivate those intentions which are not realizable and distance themselves from unrealistic or strange

goals. Their intentions are self-compatible with their emotional preferences and needs. Thus, they can adjust their needs and goals to the situational conditions. On the other hand, state-oriented people demonstrate self-regulatory deficits. They choose goals without elaborating the means of their realization. They also tend to accept tasks and expectations from outside, without checking whether they fit their own needs. They possess a reduced capacity to quit unrealistic goals and differentiate between self-compatible and self-distant goals.

In a study of 126 students of different specialties (except for psychology) Brunstein (2001) proved that in action-oriented participants the strength of goal commitment was positively related to both the perceived attainability of goals and the congruence between their goals and motives.

Baumann et al. (2005) related research on motive congruence, disposition of state-orientation, and stressful life events. The authors expected that state-oriented participants would show reduced subjective well-being, increased symptoms, and greater incongruence between explicit achievement orientation and implicit achievement motive as stressful life events increased. In contrast, action-oriented participants were not expected to be significantly influenced by stress and retain motive congruence even under stress. As hypothesized, individuals with low abilities to volitionally control affect (state-oriented individuals) had less congruent motive dispositions under stressful life events. By contrast, individuals with high self-regulatory abilities (action-oriented individuals) retained motive-congruent orientations even when exposed to stress. The authors concluded that „motive incongruent achievement orientations are a hidden source of stress that partially mediates the negative relationship between unattenuated stress and well-being“ (Baumann et al., 1995, p. 795).

3.3.3.2. Volitional regulation.

Kehr (2004a) related the research on implicit/explicit motive discrepancies (IED) and research on volitional regulation. He developed a compensatory model of motivation and

volition (Kehr, 2004b) which coalesced three previously unrelated approaches to human motivation: dual system theories, theories on volition, and theories on perceived abilities. The basic notion of the compensatory model is that volitional regulation compensates for insufficient motivation due to implicit/explicit motive discrepancies. IED might call for volitional conflict regulation and is a latent cause of the depletion of volitional strength.

The common idea is that intrinsically motivated behavior does not need volitional regulation. In contrast, volition is needed to compensate for insufficient motivation, particularly, to act against intrinsically motivated behavioral tendencies or act in the absence of intrinsic motivation. Thus, extrinsic actions, resulting from goals discrepant to basic needs, might need volitional initiation. On the other hand, volitional regulation would be unnecessary if there were no IED.

The study by Kehr (2004a) explored the relation between IED and volitional regulation and consequences of depletion of volitional strength. The results of the study between 82 managers proved that IED was longitudinally predictive of reduced volitional strength. Volitional strength also mediated the relation between IED and impaired well-being.

3.3.3.3. Self-determination.

Another line of research tried to establish a link between self-determination and concordance between implicit and explicit needs for achievement (Thrash & Elliot, 2002). In a sample of 167 participants, the authors found out that self-determined individuals demonstrate greater concordance as a manifestation of the organismic integration process. The reason for that is that people differ in the degree to which the self regulates behavior and experience, and, thus, in the degree to which integration is achieved. Individuals high in self-determination are attuned to the needs of the self and use this knowledge whether to reject or accept impulses and social pressures. Those low in self-determination, on the other hand,

easily yield to the social pressures without being attuned to the needs of the self and exhibit inconsistencies among various aspects of personality.

3.3.3.4. Private body consciousness, self-monitoring, and preference for consistency.

Finally, Thrash et al. (2007) determined three new moderators of the higher congruence between the motives: higher private body consciousness (sensitivity to internal body states), lower self-monitoring (dependence on the social environment), and higher preference for consistency.

The authors explained that individuals vary in their access to implicit motives and proposed that implicit motives may be accessed, indirectly, through the process of attending to the nonverbal bodily feeling of implicit motive arousal. In the study carried out among 203 undergraduate students enrolled in a course in personality psychology, it was proved that individuals higher in private body consciousness, a sensitivity to internal body states, are more likely to be aware of the occurrence of implicit motive arousal. In turn, these individuals are more likely to develop explicit representations of implicit motives and may use this knowledge when developing and endorsing explicit values.

The second possible reason for the incongruence between implicit and explicit motives, proposed by the authors, was concern with the social environment. Achievement values may be internalized from the social environment, regardless of whether they are congruent with implicit motives. And individuals vary in extent to which explicit motives are determined by these external influences. The construct of self-monitoring which refers to a concern with the social appropriateness of one's behavior and control of one's expressive behavior in order to create desired appearances, is particularly relevant to this aspect of individual differences.

Research supported the idea that individuals higher in self-monitoring tend to base their explicit values more on what is regarded as appropriate by the social environment. Thus,

absence of social orientation means that individuals with lower levels of self-monitoring are more likely to correspond their values to their implicit needs.

Finally, the third possible reason why implicit and explicit motives are largely uncorrelated is that individuals may not seek congruence. The authors theorized that the tendency to seek congruence may vary as a function of individuals' preference for consistency which refers to a preference that cognitions may be consistent with one another. The study proved the idea that individuals higher in preference for consistency were more motivated to embrace explicit motives that adhere with the propositional implications of implicit motives and, thus, preference for consistency moderated congruence between implicit and explicit need for achievement.

3.3.4. Promoting the implicit/explicit motive congruence.

There is no doubt that motive congruence is a highly desirable personal characteristic, especially, when the implicit motive in question is strong. So what can be done to increase motive congruence in oneself and in others?

3.3.4.1. Goal imagery.

In research on congruence between implicit motives and explicit goals, Schultheiss and Brunstein (1999) found that implicit motives predicted commitment to assigned goals only when participants were first given the opportunity to use imagery to envision goal pursuit and attainment.

In the first study conducted, the participants ($n = 50$) were assigned the goal of counselling another person in the directive manner. Their levels of need for power and affiliation were assessed. The results indicated that individuals high in both power and affiliation had higher levels of goal commitment and general arousal after goal imagery. This

motive pattern was not predictive in the control condition. In the second experiment the participants ($n = 52$) played a tetris game with a high-score list. After imagining the power-related incentives of the game, participants high in power—comparing to participants low in power—invested more effort into realizing the goal of attaining the first rank of the high-score list. Because explicit goals are closely associated with explicit motives, this research suggests that imagery may also play a role in the promotion of motive congruence.

In a similar vein, Job and Brandstätter (2009) argued that emotion-focused fantasies about perspective goal pursuits are particularly useful to bridge the gap between implicit motives and consciously selected goals. They posited that goal-related fantasies that are saturated with emotion-focused imagery helps individuals realize how pursuing and attaining a specific goal will affect them emotionally.

In Study 1 ($n = 46$) and Study 2 ($n = 48$), participants were asked to select goals in a hypothetical scenario. In Study 3 ($n = 179$), they rated their commitment to personal goals for their actual life situation. The results of all three studies supported the hypothesis that participants who focused on motive-specific affective incentives in their goal fantasies set their goals in line with their corresponding implicit motive dispositions.

These data illustrate that goal imagery is a promising tool for linking implicit motives to consciously selected goals. Nevertheless, further research is needed to scrutinize whether goal imagery interventions not only reduce discrepancies between implicit and explicit motives but also promote experiences of positive well-being.

3.3.4.2. Flow experience.

Another line of research connected the enhancement of the implicit/explicit motive congruence with the concept of the flow experience (e.g., Rheinberg & Engeser, 2010). The underlying idea behind this approach is that implicit motives have a particularly strong impact on the performance of the activity. When people become completely absorbed in these

activities because they enjoy what they are doing, they do not have to push themselves to complete a plan of action. This joyful absorption in a seemingly effortless activity was labeled *flow* by Csikszentmihalyi. Thus, people are far more likely to enter flow states when involved in motive-congruent activities than when pursuing motive-incongruent activities.

Several attempts (unpublished papers, for example, by Clavadetscher, 2003; Engeser, 2005; Rheinberg, Manig, & Vollmeyer, 2005; Steiner, 2006), cited in Rheinberg and Engeser (2010, pp. 27-30), were made to first investigate the flow hypothesis of motivational competence. As predicted, the better the participants' motivational self-concepts corresponded with their implicit motives, the more flow they experienced in their chosen projects. It also emerged that motive congruence was particularly relevant to flow experience when the implicit motive was strong.

Thus, it appears that the flow experience can offer important information about implicit motives (Brunstein et al., 1998). It not only influences the motivational congruence or competence but also indicates that people, able to experience flow without learning, should initially possess higher levels of the implicit achievement motive.

3.3.4.3. Other approaches.

On the one hand, it is possible to start by assessing people's motives using methods such as the PSE technique. PSE data, as far as they are available, can be expected to facilitate the development of a realistic self-concept. People being aware of the strength of their implicit motives, might try to attune to them their life goals (Rheinberg, 2004).

On the other hand, given the stability of implicit motives and their considerable effects on behavior and experience, it is recommended that motivational competence might be enhanced by bringing self-concepts into line with implicit motives. Although it cannot be excluded that a change in motivational self-concept may cause conflict with a person's core

value beliefs, the idea behind this approach is that explicit values are more susceptible to a change and training interventions, than implicit needs (Rheinberg & Engeser, 2010).

Finally, Rheinberg (2002) gives practical tips on how to enhance the implicit/explicit motive congruence. His first recommendation includes retrospective analysis of the past enjoyable and flow-like activities which the person could choose to perform without the promise of reward, as well as effective and joyful incentives forcing the person to be involved in an activity. Some negative experiences can also be analyzed, for example, remembering an outcome which could not be enjoyed, despite its objective success, thus, discomfoting answers are also important.

Rheinberg's second recommendation concerns the choice of correct prospective incentives. Thinking about adopting a goal, it is important not to concentrate on the consequences but imagine what feelings the realization of the particular goal will cause. Ideally, enjoyable and flow-like activities, and goals which elicit positive emotions, should be chosen.

CHAPTER 4. MEASUREMENT OF IMPLICIT VERSUS EXPLICIT ACHIEVEMENT MOTIVE

After reviewing the extensive research on the implicit versus explicit motives which function as two distinct systems, it is finally to consider how these types of motives are measured. Following the revolutionary idea by McClelland et al. (1989) stating that implicit need for achievement can be only measured with the PSE, while explicit need for achievement should be measured with self-report questionnaires, other researchers conformed to this innovation.

Ployhart (2008) divides the measurement systems which are used to assess motives into four major groups: projective, objective, subjective, and implicit/explicit measures. The most often investigated and implemented techniques for the measurement of the achievement motive include projective measures (particularly, TAT-based technique or PSE) and subjective measures, which correspond to the term of self-report measures or questionnaires. In this part an overview of the projective and subjective (self-report) measures of the achievement motive will be discussed, and advantages and disadvantages of the both types of techniques will be compared.

4.1. Projective Measurement of Implicit Achievement Motive

The longest tradition in the implicit achievement motive measurement belongs to the projective techniques, and TAT is the most widely used and researched tool for the measurement of implicit motives (e.g., Brunstein & Heckhausen, 2007; Langan-Fox & Grant, 2006; Lundy, 1988; Pang, 2010b; Schmalt & Sokolowski, 2000; Schultheiss & Brunstein, 2010b). Still if we have a look at the most often used methods in the career counseling

nowadays, the prevalence of self-report diagnostic tools will be obvious (Zimmermann, 2008).

Emphasizing the importance of the measurement of the achievement motive with the PSE, McClelland (1999) stated that "throughout the history of psychology in the 20th century, the TAT approach has emphasized the importance of what people spontaneously think about as opposed to the mainstream emphasis on how they perceive, think, and act in response to a stimulus, a question, or an experimental intervention" (p. 163).

If we summarize different points of view, expressed by experts in the psychology of motive assessment, such as Brunstein (2003, 2007), Langens and Schüler (2003), McClelland et al. (1953), Rheinberg (2004), Schmalt and Sokolowski (2000), Schultheiss and Brunstein (2010a), Schultheiss and Pang (2007), Smith (1992a), Weiner (1984), and others, we can concentrate on the following key points characteristic of the PSE measures:

- Implicit motives are nonconscious and cannot be measured through self-report, while PSE is really well-suited for their measurement.
- The technique is complex, sensitive to the situational impacts, and complicated in the scoring which demands serious training.
- The psychometric properties of PSE are altogether acceptable.

4.1.1. Objectivity.

To start with, PSE differs from self-report measures in that there are no norms for the test in the conventional sense and no standard battery of cues for measuring different types of motives. Each researcher is free to choose between already existing sets of picture cues or introduce new kinds of picture stimuli. Particular guidelines for the best possible choice of picture stimuli for the motive assessment, test administration, instructions, data collection, and

coding can be found in Pang (2010b), Schultheiss and Pang (2007), and Smith, Feld, and Franz (1992).

4.1.1.1. Choice of picture cues.

The first step in constructing a valid and reliable PSE is choosing the right number of picture cues. The researchers come to a conclusion that it is important to use a sufficient number of pictures (from four to five) (Pang, 2010b; Schultheiss & Pang, 2007; Smith et al., 1992). On the other hand, using too many picture cues (more than eight) can appear to be a disadvantage because later stories tend to produce less valid scores than earlier pictures in a battery. This decline in validity as test length increases is probably due to fatigue. The key is to use as many pictures as will make the participant cooperate in producing stories in one session, while not sacrificing validity of scores.

Conversely, having too few pictures is not optimal either because variance of scores is affected as the number of pictures used in the PSE approaches zero. Logically, the degree of dispersion of scores within a population should increase proportionally with the number of items used in a test. The general recommendation is that a PSE should include at least five pictures in a study aiming at the measurement of several different motives. Many studies which measured three motives at once made use of five-six picture cues (which means that a maximum of two-three picture cues had a strong pull for each single motive) (e.g., Brunstein et al., 1998; Langan-Fox & Grant, 2006; Schultheiss & Brunstein, 2001).

Note, however, that this recommendation is based on a data set using a multi-motive picture set and that the minimum number of pictures to use may be slightly lower if a PSE is employed for the measurement of one single motive (Schultheiss & Pang, 2007).

The selection of picture cues is based on the principle that evocative images trigger motive-relevant emotions and cognitions. Thus, cue selection is a very important topic for

valid PSE measurement. Among the cue characteristics that a researcher should consider are cue strength, cue ambiguity, universality, relevance, and extensity.

Cue strength is an average amount of imagery for a particular motive that is elicited by a picture cue. It is generally accepted that a picture that elicits at least one scoreable instance of imagery for a given motive in more than 50% of participants is considered a high-pull picture for that motive. For example, among the most commonly used PSE picture cues for the measurement of *n* Achievement, such pictures as *Women in laboratory*, *Trapeze artists*, *Boxer*, *Bicycle race*, *Soccer duel* all qualify as high-pull pictures for *n* Achievement.

Cue ambiguity refers to the ability of a picture to evoke multiple motives. It is recommended that a researcher needs to select picture cues that elicit a sufficient amount of ambiguity—while also having a high to moderately high cue strength—so as to effectively evoke the motive of interest. If a picture has too low cue ambiguity, then all participants would be prompted into inserting certain motive imagery in their stories. Thus, it is important to vary the content of picture cues so as not to arouse suspicion.

Universality refers to the tendency of pictures to have similar motivational significance to almost all members of a population and it contributes to the face validity of a picture cue. **Relevance** refers to the ability of pictures to reflect current concerns and experiences of participants. Thus, it is advisable to use pictures that are representative of current experiences and modern features, such as clothes and hairstyles.

As far as **extensity** is concerned, the authors recommend selecting picture sets that represent a broad spectrum of motivationally relevant contexts and situations that have a broader range of validity.

It is interesting to shortly review the most popular and often used picture cues for the measurement of the achievement motive.

McClelland et al. (1953) used two different sets of four pictures in their research on intrinsic achievement motivation. The four picture cues were used in the first, most popular, set in the following order: (1) „inventors“, (2) boy in checked shirt, (3) father and son, (4) boy with vague operation scene in background (Pictures 3 and 4 were taken from Murray (1938)). The authors also provide illustrative story records of this set from 30 subjects (McClelland et al., 1953).

“Inventors”

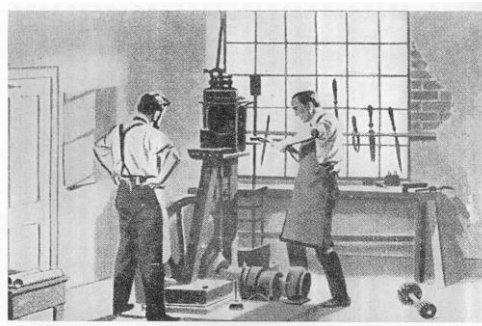


Figure 1. First picture cue for the arousal of *n* Achievement introduced and used by McClelland et al. (1953). Here reprinted from “*The Achievement Motive*”, by D.C. McClelland et al., 1953, New York, NY: Appleton-Century-Crofts, p. 100. Copyright © 1953 by Appleton-Century-Crofts Inc.

Boy in Checked Shirt

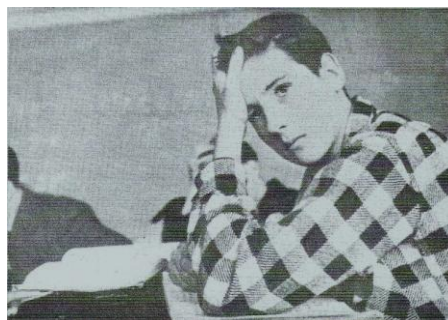


Figure 2. Second picture cue for the arousal of *n* Achievement introduced and used by McClelland et al. (1953). Here reprinted from “*The Achievement Motive*”, by D.C. McClelland et al., 1953, New York, NY: Appleton-Century-Crofts, p. 101. Copyright © 1953 by Appleton-Century-Crofts Inc.

Father and Son

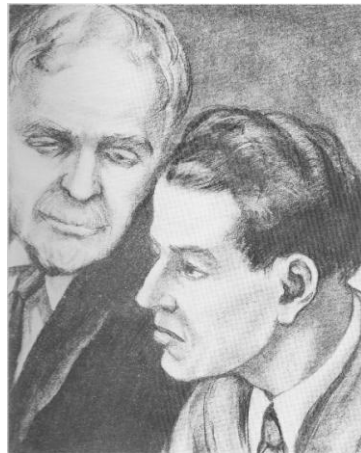


Figure 3. Third picture cue for the arousal of *n* Achievement used by McClelland et al. (1953). Introduced by and here reprinted from “*Thematic Apperception Test*”, by H.A. Murray, 1971, Cambridge, Mass.: Harvard Univ. Press. Copyright © 1971 by Henry Alexander Murray.

Boy with Vague Operation Scene in Background



Figure 4. Fourth picture cue for the measurement of *n* Achievement used by McClelland et al. (1953). Introduced by and here reprinted from “*Thematic Apperception Test*”, by H.A. Murray, 1971, Cambridge, Mass.: Harvard Univ. Press. Copyright © 1971 by Henry Alexander Murray.

Picture cues that are lately used for the measurement of the achievement motive can be found in Smith (1992a), and they are extensively researched and promoted by Prof. Dr. Oliver Schultheiss and other authors (e.g., Brunstein & Hoyer, 2002; Brunstein et al., 1998;

Hofer & Chasiotis, 2003; Langan-Fox, 2006; Langens, 2007; Pang, 2010b; Pang & Schultheiss, 2005; Schultheiss & Brunstein, 1999; Schultheiss et al., 2009, etc.).

Women in Laboratory

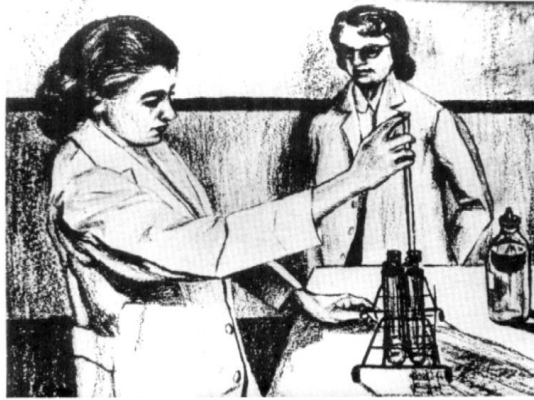


Figure 5. Picture cue for arousal of *n* Achievement. First introduced by McClelland (1975). Here reprinted from “*Motivation and Personality: Handbook of Thematic Content Analysis*”, by C.P. Smith (Ed.), 1992, New York, NY: Cambridge University Press, p. 636. Pictures are not individually copyrighted.

Trapeze Artists

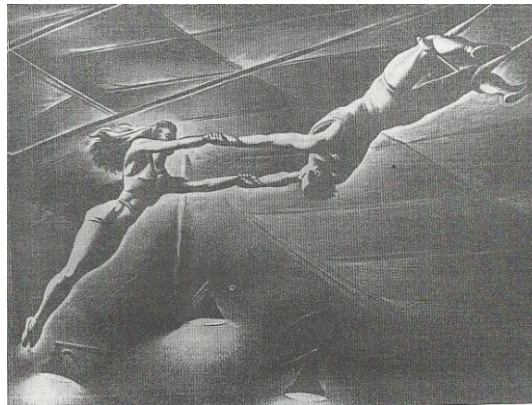


Figure 6. Picture cue for arousal of *n* Achievement. First introduced by D.C. McClelland and R.S. Steele (1972). Here reprinted from “*Motivation and Personality: Handbook of Thematic Content Analysis*”, by C.P. Smith (Ed.), 1992, New York, NY: Cambridge University Press, p. 637. Pictures are not individually copyrighted.

Boxer



Figure 7. Picture cue for arousal of n Achievement. First introduced by D. C. McClelland and R.S. Steele (1972). Obtained from Prof. Dr. Oliver Schultheiss on personal request (Oliver.Schultheiss@psy.phil.uni-erlangen.de).

Bicycle Race



Figure 8. Picture cue for arousal of n Achievement. First introduced by M.M. Wirth, K.M. Welsh, and O.C. Schultheiss (2006). Obtained from Prof. Dr. Oliver Schultheiss on personal request (Oliver.Schultheiss@psy.phil.uni-erlangen.de).

Thus, the choice of picture cues for the study of the achievement motive is not big, and the picture cues often used in the achievement motivation research are mostly sport-oriented and depict people in athletic surroundings. But the common situations in which achievement motive is aroused are far more versatile and can include work-related or academic contexts.

The experts recommend using pictures that are similar to the situation in which dependent variables are assessed (Pang, 2010b; Schultheiss & Pang, 2007). And if a particular study requires the fine-tailoring of picture cues to a particular assessment situation or social context, new picture cues can be introduced by, for instance, using pictures from ads and reports in newspapers and magazines.

For example, new picture cues introduced by Blankenship et al. (2006) were tested showing two and more people in achievement situations. In Experiments 1 and 2 of the study, six strong achievement pictures were identified: two people jogging, three people performing surgery, two people in a laboratory, a group at graduation, two people climbing a mountain, and five people skydiving. In Experiment 3 these six pictures and four more showing a single individual (studying, swimming, star-watching, and kayaking) were tested.

Studying

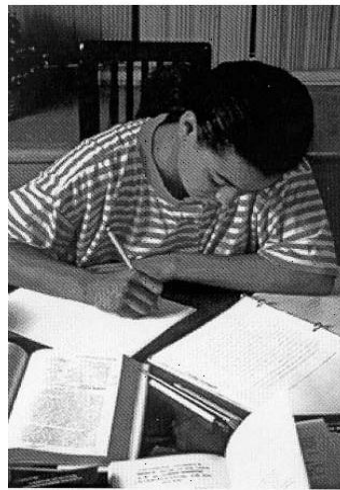


Figure 9. Picture cue for arousal of *n* Achievement. First introduced in and here reprinted from “Using the Multifaceted Rasch Model to Improve the TAT/PSE Measure of Need for Achievement”, by V. Blankenship et al., 2006, *Journal of Personality Assessment*, 86 (1), p. 108. Copyright © 2006 by Lawrence Erlbaum Associates Inc.

Mountain Climbing.



Figure 10. Picture cue for arousal of *n* Achievement. First introduced in and here reprinted from “Using the Multifaceted Rasch Model to Improve the TAT/PSE Measure of Need for Achievement”, by V. Blankenship et al., 2006, *Journal of Personality Assessment*, 86 (1), p. 108. Copyright © 2006 by Lawrence Erlbaum Associates Inc.

4.1.1.2. Test administration and standard instructions.

As far as test administration and instructions are concerned, procedures are strict and discussed in details in several publications (e.g., Langens & Schüler, 2003; Pang, 2010b; Schultheiss & Pang, 2007; Smith et al., 1992). A standard procedure requires that each picture should be presented for about 10 to 15 seconds, after which participants are told to write a story on a sheet of paper or type it directly into the computer. They should have no opportunity to view the picture once they have started writing. A maximum of five minutes are given for writing each story. It is very important to exert as little pressure as possible on participants (e.g., Lundy, 1988). This is the reason why computer administration is recommended over administration by an experimenter.

By using computers for writing PSE stories researchers also save time because they do not have to transcribe stories for coding. Online assessment increases the reach of research on implicit motives to other parts of the world (Blankenship, 2010).

For example, Blankenship and Zoota (1998) compared the amount of power imagery in stories written by hand and those written on the computer under timed and untimed conditions in a laboratory setting. Contrary to expectations, there were no differences in total amount of power imagery for five stories (raw scores) in computer-written versus handwritten conditions ($M = 10.45$, $SD = 5.58$, $n = 60$ versus $M = 10.63$, $SD = 6.04$, $n = 60$, respectively), or in timed versus untimed conditions ($M = 10.43$, $SD = 5.44$, $n = 60$ versus $M = 10.65$, $SD = 6.16$, $n = 60$, respectively). The authors also noted that participants in the timed, computer-written condition, reported that they felt rushed; therefore, they recommend that when the PSE is presented on the computer, participants not be timed.

Naglieri et al. (2004) provided further guidance for testing online. The benefits of internet testing are speed, cost, and convenience. Testing over the internet provides rapid communication of findings to clients, patients, researchers, and the public. It also allows researchers to collect data rapidly, conveniently, and at lower costs than in face-to-face research settings. Internet testing is cheaper and more efficient; it saves valuable time and provides results more rapidly and easily compared with face-to-face testing. The authors came to the conclusion that online assessment is appropriate when proper attention is given to validity and reliability, and they stress that “internet testing should be subjected to the same defensible standards for assessment tools as paper-and-pencil tests when their results are used to make important decisions” (Nagliery et al., 2004, p. 161). On the other hand, the psychologists should be open to new opportunities that might evolve with the development of new methods of testing, and the limits of psychometrics might be expanded to keep pace with these innovations.

Gosling, Vazire, Srivastava, and John (2004) explored six preconceptions held about internet collection of data. The authors compared internet versus traditional models of gathering data using the Big Five Inventory and found out that findings based on data gathered on the internet are comparable to those from traditional methods. For example, it

was proved that the samples gathered using internet methods are at least as diverse as many of the samples already used in psychological research, and internet users do not differ from nonusers on markers of adjustment and depression. The data provided by internet methods are also of at least as good quality as those provided by traditional paper-and-pencil methods, and, thus, the data collected from internet methods are not as flawed as is commonly believed. It is true that internet data can be compromised by anonymity of participants, but researchers can take steps to eliminate repeat responses.

To summarize, web questionnaires possess some strengths, such as large and diverse samples and motivated respondents, as well as drawbacks, such as lack of control over the participants' environment and susceptibility to fake responses. On the other hand, traditional methods which are sometimes viewed as superior to internet methods can have their own weaknesses such as over-reliance on student samples and lack of anonymity. The authors conclude that „there is room for both, and researchers should select whichever method suits their particular research goals“ (Gosling et al., 2004, p. 102).

Standard instructions for the PSE administration can be found in several publications (Atkinson, 1966d; Lundy, 1988; Pang, 2010b; Schultheiss & Pang, 2007; Smith et al., 1992). The German version of the instructions can be found in Langens and Schüler (2003).

In general, it is important to emphasize that instructions should be conveyed as suggestions, not commandments. According to the standard procedure, participants are asked to write a story in response to four standard questions:

- 1) What is happening? Who are the persons?
- 2) What has led up to this situation? What has happened in the past?
- 3) What is being thought? What is wanted?
- 4) What will happen? What will be done?

Typically, these probes are spaced evenly down the page with enough room for the participant to write a paragraph in response to each probe. But Blankenship and colleagues (Blankenship et al., 2005, 2006; Blankenship & Zoota, 1998) offered interesting improvements which can increase the reliability of the PSE. The authors suggested that each paragraph of the PSE story should be coded separately and independently from the rest of the story. If the paragraphs of the story are viewed as test items, they vary in difficulty level, and participants put different achievement imagery into the stories they write in response to the picture and the probes on which the stories are based.

4.1.1.3. Coder training.

Although all the scoring systems for the analysis of the motive imagery from PSE differ in their scoring categories, they all have one thing in common. From the very beginning, McClelland and his colleagues were concerned with achieving high levels of interscorer agreement—much higher levels than those reported for the early TAT scoring systems. Over the years, the requirement of high interscorer reliability (typically category agreement of 85% or higher) has been a consistent hallmark of research carried out with all measures developed in the McClelland-Atkinson tradition.

For checking the reliability and computing percentage agreement with the expert scoring of each motive the following formula can be used:

Expert Scoring Agreement Formula

$$\frac{\text{Number of agreements between} \\ \text{2 } \underline{x} \text{ yourself and expert on the} \\ \text{presence of motive imagery}}{(\text{Number of times you scored motive imagery}) + \\ (\text{Number of times expert scored motive imagery})}$$

Figure 11. Formula for checking reliability and computing percentage agreement with the expert scoring of the motives in the practice sets. Here reprinted from “*Manual for Scoring Motive Imagery in Running Text* (4th ed.), by D.G. Winter, 1994, Unpublished manuscript, Department of Psychology, University of Michigan, Michigan, p. 30. Copyright © 1994 by David G. Winter.

4.1.2. Choice of achievement-related coding system.

4.1.2.1. McClelland et al. (1953).

McClelland et al.’s (1953) scoring system for the achievement motive provided the blueprint for many other subsequent motive scoring systems. This *n* Achievement scoring system also provided a guideline for making scoring decisions that would be adopted by many other authors—the scorer must first determine whether a story contains any reference to the motive goal before going on to score the motive-related subcategories. With respect to achievement, the scorer must determine whether the story contains reference to an achievement-related goal in order to justify scoring achievement-related subcategories (Table 1).

Table 1.*Subcategories of Achievement-Related Coding System by McClelland et al. (1953)*

Subcategory full name	Subcategory abbreviation	Subcategory example
Stated need for achievement	<i>N</i>	He wants to be a doctor. He hopes to succeed.
Successful Instrumental Activity	<i>I+</i>	He will try his best. He will become the best doctor in the U.S.
Unsuccessful Instrumental Activity	<i>I-</i>	He goes to bed and gets early and studies. Consequently he doesn't do well on the test.
Doubtful Instrumental Activity	<i>I?</i>	He is thinking hard and trying hard. He may not do very well or also he may.
Positive Anticipatory Goal State	<i>Ga+</i>	They will attempt to sell their new discovery with a feeling of surety that they will become rich.
Negative Anticipatory Goal State	<i>Ga-</i>	The boy thinks he just can't make it through college.
Doubtful Anticipatory Goal State	<i>Ga-</i>	He wonders if he will succeed in solving the future problems of college curriculum.
Positive Affective State	<i>G+</i>	The men are both happy due to the new discovery.
Negative Affective State	<i>G-</i>	He is thinking what a damn fool he has been.
Personal Obstacle	<i>Bp</i>	In the past he has had poor marks.
Environmental Obstacle	<i>Bw</i>	They have not the equipment needed for rubber improvements.
Nurturant Press	<i>Nup</i>	An old experienced man is giving a young kid a little helpful advice on how to improve his work.

Note. Adapted from “*The Achievement Motive*”, by D.C. McClelland et al., 1953, New York, NY: Appleton-Century-Crofts, pp. 122-138. Copyright © 1953 by Appleton-Century-Crofts Inc.

According to the manual (McClelland et al., 1953), achievement imagery is scored for any indication of concern with a standard of excellence which may be expressed by (1) competition with a standard of excellence (*AI 1*), (2) unique accomplishment (*AI 2*), and (3) long-term involvement (*AI 3*). Scoring of one of these achievement imagery categories justifies the further analysis of the achievement-related sub-categories.

Each subcategory is scored once per story (one point). Finally, one more category, Achievement Thema (*Ach Th*), is scored when the achievement imagery is elaborated in such a manner that it becomes the central plot or theme of the story.

Stories which contain some references to achievement but fail to meet one of the criteria for achievement imagery are scored for *doubtful achievement imagery* (zero points). Most frequently the stories to be classified as doubtful are the ones in which one of the characters is engaged in a commonplace task or solving a routine problem. Often there is no evidence of concern over mastery, perfection or the outcome, no affective arousal, and so forth. Stories which has no reference to achievement goal, are scored for *unrelated imagery* (minus one point). The total score for achievement motivation is derived by summing up scores over the whole set of pictures.

The authors provide practice sets for training scorers to achieve adequate reliability with expert materials. The information about this scoring key and practice sets can be found in German in Langens and Schüler (2003), and in English in McClelland et al. (1992), Pang (2010a), Smith and Feld (1966), and Smith and Franz (1992).

The scoring key is popular and used in many studies with the measurement of the achievement motive (e.g, Biernat, 1989; Emmons & McAdams, 1991; Langan-Fox & Grant,

2006; Lundy, 1988; McClelland & Franz, 1992; Reuman, 1982; Sorrentino & Field, 1986; Woike, 1995; Woike et al., 2003; etc.).

4.1.2.2. *Blankenship et al. (2005).*

In 2005 Blankenship and colleagues made a successful attempt to revise the coding system developed by McClelland et al. (1953). As in the original coding system, one of the three categories of achievement imagery (competition with a standard of excellence, unique accomplishment, and long-term involvement) must be identified in the story before subcategories can be coded. But the authors decreased the original number of subcategories from 10 to seven.

Firstly, Nurturant Press (*Nup*) was eliminated from the coding system because giving help is a basis for coding need for power. Including Nurturant press (a power theme) in a coding system for need for achievement violates the assumption of unidimensionality.

Secondly, the subcategory Achievement Thema (*Ach Th*) was eliminated. The authors analyze each paragraph individually and there is no place to locate this bonus point. They also argue that the addition of this bonus point is fairly arbitrary and may be a source of unreliability between coders.

Finally, the two subcategories, Personal Obstacle (*Bp*) and Environmental Obstacle (*Bw*), were combined into one subcategory—Block to Achievement (*B*). The authors argue that it is rare for these two categories to be in the same story, and it is hard to distinguish between the two which can be another source of disagreement among the coders.

On their web-site the authors provide extensive lists of instances of coding categories which can be used as a guide for coding practice (http://jan.ucc.nau.edu/vrb/nAch/Introduction_Coding_Manual.htm).

The idea that the motive scoring system by McClelland et al. (1953) can be refined through removal of redundant subcategories was examined and confirmed in the study done

by Langan-Fox and Grant (2006). The authors aimed at finding out the frequency with which different subcategories in the scoring system for each motive were scored to evaluate their necessity. They were also interested to determine whether the most frequently occurring subcategories were consistent across different cues and samples. Results from two data sets comprising 547 men and women suggested that there were several subcategories that consistently emerged as low prevalence subcategories across both different cues and samples. For *n* Achievement, consistently scored subcategories were *N*, *I*, *Ga+*, *G+*, and *Ach Th*, and less frequently scored subcategories were *Ga-*, *Bp*, *Bw*, *Nup* and *G-*. Thus, the results for *Bp*, *Bw*, and *Nup* were consistent with the recommendations made by Blankenship et al. (2005).

4.1.2.3. Heckhausen (1963).

Heckhausen (1963) expanded on McClelland's model by developing two independent PSE measures of two different components of the achievement motive—Hope of Success (HS) and Fear of Failure (FF). The basic idea is that individuals high predominantly in hope for success want to do well on tasks because they associate pleasure with successful mastery of challenges, whereas individuals high predominantly in fear of failure want to do well on tasks to avoid the negative outcomes associated with the failure to master challenges independently.

Heckhausen adopted most of the original *n* Achievement coding categories, but he added more relevant coding categories to make the HS versus FF distinction the core of the system. The author describes the system categories and provides a practice set for training scorers to achieve adequate reliability with expert materials (Heckhausen, 1963, pp. 283-365).

Table 2.*Subcategories of Coding System for Hope of Success by Heckhausen (1963)*

Subcategory full name	Subcategory abbreviation	Subcategory explanation
Need for Success	<i>NS</i>	Story character sets a positively framed achievement goal.
Instrumental Activity to Succeed	<i>IS</i>	Story character does or will do something that will bring her or him closer to the achievement goal, without relying on others' help.
Expectation of Success	<i>ES</i>	Expectation of success in an achievement-related activity.
Praise	<i>P</i>	Whenever a person praises, rewards, or distinguishes somebody else who has worked well or delivered a good performance.
Positive Affect	<i>A+</i>	Positive affect states that occur in an achievement context.
Success Theme	<i>ST</i>	At least <i>NS</i> or <i>ES</i> has been scored and no Fear of Failure category has been scored except <i>A-</i> and <i>EF</i> .

Note. Adapted from "The Achievement Motive: A Review of Theory and Assessment of *n* Achievement, Hope of Success, and Fear of Failure", by J.S. Pang, 2010, in O. C. Schultheiss & J. C. Brunstein (Eds.), *Implicit Motives* (pp. 30-70). New York, NY: Oxford University Press. Copyright © 2010 by Oxford University Press, Inc.

Table 3.*Subcategories of Coding System for Fear of Failure by Heckhausen (1963)*

Subcategory full name	Subcategory abbreviation	Subcategory explanation
Need to Avoid Failure	<i>NF</i>	When a story character expresses a need or intention to avoid failure within an achievement context.
Instrumental Activity to Avoid Failure	<i>IF</i>	When story character does or will do something to soften or avoid a failure.
Expectation of Failure	<i>EF</i>	Expectation of failure in an achievement-related activity.
Criticism	<i>C</i>	Whenever a person openly criticizes the work, performance, or ability of somebody else.
Negative Affect	<i>A-</i>	Negative affect states that occur in an achievement context.
Failure	<i>F</i>	When an achievement-related activity ends in a failure.
Failure Theme	<i>FT</i>	At least <i>NF</i> or <i>F</i> has been scored and no Hope of Success category has been scored except <i>IS</i> .

Note. Adapted from “The Achievement Motive: A Review of Theory and Assessment of *n* Achievement, Hope of Success, and Fear of Failure”, by J.S. Pang, 2010, in O. C. Schultheiss & J. C. Brunstein (Eds.), *Implicit Motives* (pp. 30-70). New York, NY: Oxford University Press. Copyright © 2010 by Oxford University Press, Inc.

Unfortunately, Heckhausen's system has not been used very frequently by English-speaking researchers interested in achievement motivation because this measure was written in German. Schultheiss (2001) translated the system into English (cited in Pang, 2010a). But the manuscript is not available in the library or for public use.

One of the major drawbacks of the coding system is that Heckhausen developed his coding categories through deductive reasoning and literature review (Pang, 2010a), but these shortcomings were corrected in the "Revised Measure of Hope of Success and Fear of Failure" by Pang which is also an unpublished dissertation (see Pang, 2010a). Pang used arousal procedures to develop separate PSE-based measure content-coding systems for HS and FF, and these systems can be used by researchers interested in the measurement of these two separate components of the achievement motive.

4.1.2.4. Winter (1994).

Winter's (1994) "Manual for Scoring Motive Imagery in Running Text" was constructed to measure all three most popular motives—need for affiliation, achievement, and power. Each subscale of the running text system is an abbreviated version of the original motive system on which it is based. In other words, only the basic imagery of each motive is scored; the subcategories are not used. Thus, the system gained a lot of popularity due to its shortness and easiness, and was used as a scoring key for the analysis of the achievement motive in many studies (e.g., Brunstein & Hoyer, 2002; Brunstein, et al., 1998; King, 1995; Schultheiss & Brunstein, 1999, 2001; Schultheiss, Liening, & Schad, 2008; Schultheiss et al., 2009; Zurbriggen, 2000; etc.).

According to the manual, achievement imagery is scored for any indication of a standard of excellence. Such standards are usually expressed in one of the five forms.

Table 4.*Categories of Achievement-Related Coding System by Winter (1994)*

Category description	Category example
Adjectives that positively evaluate performances or the outcomes of implicit performances.	She wanted to find a better way.
Goals or performances that are described in ways that suggest positive evaluation.	The surgeon had to work fast, without any mistakes.
Mention of winning or competing with others, so long as winning is a reflection of excellence rather than of pure aggression or power.	We have sustained a higher growth rate in recent years than any other nation.
Failure, doing badly, or other lack of excellence, so long as there is at least some sadness, negative feeling, or concern to do better.	She was angry that the bad weather slowed down her time in the race.
Unique accomplishment.	She will discover a cure for cancer.

Note. Adopted from “*Manual for Scoring Motive Imagery in Running Text* (4th ed.), by D.G. Winter, 1994, Unpublished manuscript, Department of Psychology, University of Michigan, Michigan, pp. 8-11. Copyright © 1994 by David G. Winter.

Winter (1991) also provides extensive data on the reliability and validity of the new scoring system. For example, results of the psychometric studies of convergence of the integrated running test system with the original scoring systems yielded highly significant correlations, suggesting that there is considerable overlap (for *n* Achievement $r = .54^{***}$, $p < .001$ by story and $r = .48^{***}$, $p < .001$ by subject). When the same stories were scored for all three motives with the integrated running test scoring system, the same condition instructions produced high test-retest correlations (for *n* Achievement $r = .71^{***}$, $p < .001$). Winter also proved that the system has considerable predictive validity, examining not only traditional

TAT stories, but numerous speeches, interviews, literary works and carrying out at-a-distance studies of historical figures and political leaders.

For the analysis of the stories written in German there is an opportunity to practice scoring skills using the “Deutsches Kalibrierungsset für Winters (1994) Manual for Scoring Motive Imagery in Running Text“ available from Prof. Dr. Oliver Schultheiss on request. It is also to mention that the original manual is still not published and not available for public use!

4.1.3. Internal consistency issues.

To start with, in their pioneering work on the achievement motive, McClelland et al. (1953) were first to point out that TAT-based measures have low reliability in the sense that the scores obtained in stories that were written in response to one picture did not correlate very well with scores derived from stories written in response to other pictures. This finding emerged despite the fact that independent coders could typically agree on the presence of motive imagery in a given story in 85% of the cases or more.

Subsequently, Entwisle (1972) reviewed the published findings which suggested that reliability of fantasy-based measures of achievement motivation is generally low, varying between .30 and .40. Keeping in mind that only if test homogeneity is sufficient, it is worthwhile to investigate other facets of reliability and, after that, search for validity information, the author came to the conclusion that the fantasy-based measures are not likely to predict anything validly.

Similarly, Fineman (1977) raised the same arguments and criticized the universal enthusiasm expressed about the good coding reliability which can be obtained for the TAT and which has nothing to do with the internal reliability of the measure. In the author's point of view, “we can have little confidence that the TAT is measuring any unitary psychological construct, let alone *n Ach*” (Fineman, 1977, p. 8).

The first to challenge the assertion that low internal consistency necessarily entails low validity was Atkinson (1982). His explanation was based on the dynamics of action theory. Traditional test theory emphasizes that test items are unaffected by preceding events, but dynamics of action theory assumes that thought and behavior are part of a continuous stream, and it expects behavior to vary over time given a stable personality and a constant environment. This theory also explains that estimates of internal consistency may not be applicable to the assessment of implicit motives, as they are only suitable for assessment tools (such as trait inventories) that tap declarative, self-related memories (Schultheiss & Pang, 2007). Motivational process is not stable in its nature and, thus, internally not consistent.

Reuman (1982) aimed to provide the empirical support for the dynamics of action theory. He hypothesized that if the dynamics of action analysis is correct, the construct validity of *n* Achievement for the group of subjects who are high in ipsative variability will be high, even if the internal consistency of *n* Achievement for these subjects is low. Reuman (1982) demonstrated that in a subsample of individuals with high ipsative (i.e., within-subjects) variability of achievement motive scores across four picture stories (Cronbach's $\alpha = .1.23$), the achievement motive correlated at .62 with a criterion (attempted solutions on arithmetic problems). In contrast, in a subsample of individuals with low ipsative score variability (Cronbach's $\alpha = .42$), the achievement motive correlated only at .20 with the criterion.

Schultheiss et al. (2008) offered an alternative account of low internal consistency of the PSE. They proposed that intraindividual variability in motive imagery produced in response to PSE picture cues reveals which types of situations a person has learned to perceive as ripe with motivational incentives and which not. If this assumption is true, then consistency of motive imagery scores should not be expected from one picture cue to the next, but for a given picture cue from one testing occasion to the next. As predicted, 106 participants of the study showed substantial stability from one testing situation to the next (14

days apart) in the way they imbued stories written in response to specific pictures with motivational imagery.

In line with this research, Schultheiss and Pang (2007) found that the source of interstory variability lies in the dissimilarity of PSE picture cues. For example, individuals who inject achievement imagery only into stories based on pictures showing couples, and not competitive situations, might have learnt to express the need for achievement only in close relationships, but not in competitive situations, whereas someone writing stories full of achievement imagery to both pictures, would have a more extensive achievement motive because he responds to a greater variety of situations. The authors came to the conclusion that highly dissimilar picture cues would have lower internal consistency, but broader validity than a PSE with highly similar picture cues.

One more important explanation of the internal consistency dilemma was added by Green (1981) who emphasized that inventories simply have more items. On a 50-item test with a reliability of .90, the average item intercorrelation is only .15 and from this perspective, individual stories (considered as items) are neither better nor worse samples than items from inventories. Consequently, increasing test length improves the reliability of a PSE as it does for a self-report inventory.

Thus, summing up all these arguments, we can conclude that striving for high internal consistency should not be a primary goal by a construction of a highly valid PSE.

4.1.4. Test–retest reliability issues.

Test–retest stability of PSE is also often criticized. Many studies showed that *n* Achievement retest correlations are normally low and nonsignificant, lying in the range between $r_{tt} = .13$ and $r_{tt} = .70$ (Schultheiss & Pang, 2007).

There are several factors which can increase the retest stability of PSE: decreasing retest intervals and using special instructions which explain to the testees that they may repeat what they wrote before or change their stories. Schultheiss and Pang (2007) provide retest coefficients of $r_{tt} = .71$ (retest interval of one day), $r_{tt} = .60$ (one week), $r_{tt} = .52$ (one month), and $r_{tt} = .37$ (one year). Lundy (1985) managed to get retest coefficients of $r_{tt} = .48$ for n Intimacy and $r_{tt} = .56$ for n Affiliation with the retest period of one year using special instructions. These coefficients lie in the same range as for questionnaires.

One more important factor that might influence the stability of the results is many recent life changes. Koestner, Franz, and Hellman (1991, cited in Smith, 1992b) obtained retest coefficients for n Power with a retest period of eight months which differed drastically for testees who had few recent life changes ($r_{tt} = .55$) and those who experienced many changes ($r_{tt} = -.01!$).

Thus, we can summarize that reliability estimates for thematic apperception measures tend to be considerably lower than those for self-report questionnaires, but literature reviews have exaggerated this difference.

Gathering the above-mentioned information, we can follow the recommendations and thus, optimize the objectivity, reliability, and validity of our PSE (Blankenship et al., 2005, 2006; Blankenship & Zoota, 1998; Lundy, 1985; Pang, 2010b; Schultheiss & Pang, 2007; Smith, 1992b; Smith et al., 1992) by:

- Reducing coding errors, striving for the highest possible degree of interscorer agreement of .85 and higher.
- Using an appropriate number of picture cues with enough picture cue strength, ambiguity, universality, extensity, and relevance.
- Fine-tailoring of picture cues to a particular assessment situation or social context.
- If several testing sessions, make testing conditions as similar as possible, separated by an appropriate period of time.

- Giving instructions in a casual, neutral, nondirective manner (possibly, computer administration).
- Exhibiting no time pressure when collecting stories over computer.
- Scoring the stories by separate paragraphs written to the four questions or probes, as the PSE test items.
- Never following a self-report questionnaire or a cognitive task.
- Obtaining scores from a heterogeneous population.

4.2. Subjective (Self-Report) Measurement of Explicit Achievement Motive

Lots of publications discussed the advantages and disadvantages of self-report measures. The term of a self-report measure comprises different measurement techniques which are based on subjective, often verbally transmitted statements. The dominant role among these diagnostic tools belongs to the self-report questionnaires (Mummendey, 2005).

These tools usually consist of a series of brief items asking the respondents to use a multiple-choice answer format to indicate personal information about thoughts, emotions, and past experiences. The questionnaires assume that a correspondence exists between what a person says about himself or herself and what is actually true. They also assume that individuals are aware of their thoughts and emotions, and are willing to share them openly (Gatewood, Field, & Barrick, 2007). Whatever the name, the defining characteristic of such diagnostic tools is that the participant is presented with a fairly structured question, and then has to provide a response he or she thinks is most appropriate.

The most famous questionnaires for the measurement of the achievement motive in the German-speaking area are (e.g., Brunstein & Heckhausen, 2007; Rheinberg, 2004, Schweizer, 2006; Zimmermann, 2008): the Mehrabian Achievement Risk Preference Scale (MARPS [Mehrabian, 1968]), the Achievement Motive Scale (AMS [Gjesme & Nygard,

1970)), Leistungsmotivationstest (L-M-T [Hermans, Petermann, & Zielinski, 1978]) and Leistungsmotivationsinventar (LMI [Schuler & Prochaska, 2001]).

Several multi-dimensional personality inventories also include scales for the measurement of the achievement motive: the Bochumer Inventory for Career Personality Description (BIP [Hossiep & Paschen, 1998]) includes a scale Achievement Motivation; one of the 20 scales of the German Personality Research Form (D-PRF [Stumpf, Angleitner, Wieck, Jackson, & Beloch-Till, 1985]) is Striving for Achievement, and the Freiburger Personality Inventory (FPI-R [Fahrenberg, Hampel, & Selg, 2001]) also includes the scale Achievement Orientation.

Schmalt, Sokolowski, and Langens (2000) also developed a technique called Multi-Motive-Gitter (MMG) which is considered to be semi-projective and meets all the requirements of a highly standardized inventory, thus, will be reviewed in this chapter.

4.2.1. Examples of the leading questionnaires.

4.2.1.1. *Mehrabian Achievement Risk Preference Scale (MARPS), 1968.*

The questionnaire by Mehrabian (1968) was the first self-report measure of the achievement motive which gained popularity in the achievement motivation research. In 1976 a German version of the inventory was published by Mikula, Uray, and Schwinger.

The inventory is not researched and implemented very often, probably due to its two main drawbacks. It was not and still is not standardized (Rheinberg, 2004). And particular theories used by the test construction are not specified (Zimmermann, 2008).

The 26 items of the questionnaire measure different behavioral preferences, characteristic of achievement-oriented people (for example, high value of success, realistic goal-setting, preference for ability-dependent tasks and performance-based payment). Contentwise, the questions are more suited to the grown-ups and employed youths than to the

school children and students. The psychometric properties of the MARPS are little known, though the questionnaire was often implemented in the research in the past (Rheinberg, 2004).

4.2.1.2. Achievement Motive Scale (AMS), 1970.

This questionnaire by Gjesme and Nygard (1970) is used nowadays pretty often in the research despite its biggest drawback—it is still not standardized (Zimmermann, 2008). The inventory was originally developed in Norwegian and later translated from English into German by Götttert and Kuhl (1980). In 2006 Lang and Fries developed a short version of the AMS which proved to have a better factorial stability (Lang & Fries, 2006; Rheinberg, 2004).

Test construction and dimensions.

The advantage of the AMS is that the two components of the achievement motivation—hope for success and fear of failure—are measured independently. The AMS contains 15 items for the measurement of each component. So the test is strictly relied on the achievement motivation concepts of Atkinson and McClelland. The short version of the AMS contains 10 items altogether (five items for the measurement of hope for success and five items for the measurement of the fear of failure).

Psychometric properties.

The German version of the AMS was analyzed by Dahme et al. (1993). The internal consistency of the Hope for Success scale lies between Cronbach's $\alpha = .70$ and $.85$, and of the Fear of Failure scale—between $\alpha = .80$ and $.90$. The one year retest stability of the FF scale proved to be satisfactory ($r_{tt} = .66$). The retest stability values of the HS scale depended on success or failure in the important competition (“Jugend forscht”) in which the tested school children participated meanwhile.

The internal consistency of the short version of the AMS is also good altogether despite the limited number of items and corresponds to the values of the long version. The AMS short version does not correlate with projective measures of the achievement motive,

but correlates highly with other questionnaires, for example, the subscale Achievement Motivation of the PRF (Jackson, 1967).

Criticism.

The AMS is an economical and theoretically clear inventory. It is advisable to use it when it is necessary to measure the two components of the achievement motive separately in the way they are self-perceived by the testees. But the scales are not suitable for the individual counseling due to their shortness (Rheinberg, 2004). Both inventories, the English and German versions, are also not available for public use.

4.2.1.3. Leistungsmotivtest (L-M-T), 1978.

L-M-T is a standardized inventory, developed by Hermans et al. in 1978. The test is actually a German adaptation of the Dutch original version (Schweizer, 2006) and can be used to assess the achievement motive of the school children and students in the age range between 16 and 20.

Test construction.

The questionnaire is based on different theories, developed in the domain of achievement-motivated behavior. Based on a literature search, the authors gathered the findings from different studies which provide characteristics differentiating between high- and low-achievement oriented students (e.g., by Atkinson, Weiner, Feather, French, etc.). Fear of failure is assessed as a separate personality component of the achievement motive.

L-M-T is advised to be used in the school-psychological counseling and clinical psychology. It can also be used for career counseling but only in Germany because it is totally adjusted to the German school levels (Diagnostikkommission des Schweizerischen Verbandes für Berufsberatung SVB, 1996).

Dimensions.

The questionnaire contains four subscales (four subscales in the original version), namely, Striving for Achievement (15 items, for example, “The requirements that I set for myself at work are high/very high), Persistence and Diligence (13 items, for example, “At school I was considered to be hardworking”), Achievement-Stimulating Test Anxiety (18 items, for example, “A little bit fear is often beneficial for my performance”), and Achievement-Inhibiting Test Anxiety (10 items, for example, “When I am called up before the class, I often have heart-throb”).

Psychometric properties.

The internal consistency of the first two subscales lies between Cronbach’s $\alpha = .60$ and $\alpha = .70$, and between $\alpha = .73$ and $\alpha = .85$ for the last two ones. The general reliability is considered satisfactory with $r_{tt} = .77$ (Hermans et al., 1978).

As far as the validity is concerned, some studies were carried out to examine the properties of the Dutch version of L-M-T (Fromme & von Georgi, 2002). For example, the two scales Striving for Achievement, and Persistence and Diligence were highly correlated with the GPA of the school children. These scales also correlated with the results of the PSE.

The norms exist for the schoolchildren in the age between 16 and 20, which are differentiated between different age levels and gender. The standardization was carried out in a group of 587 children who studied in the secondary, vocational, and technical schools.

Criticism.

The peculiarity of the inventory consists in the division of the dimension Test Anxiety into Achievement-Stimulating and Achievement–Inhibiting (Rheinberg, 2004). So it is advisable to use this measure for the intervention, counseling, and research purposes when it is important to differentiate between these two components of the achievement motive.

It is necessary to mention that the authors of L-M-T advise in the manual that the usage of the measure should be limited to the research purposes due to the item transparency,

which can be a drawback in the selection situations. The test is also sold now without any changes from the date of its construction in 1978. Taking these two facts into consideration, critics do not recommend implementing the inventory in the counseling situations for the price and actuality reasons (Diagnostikkommission des Schweizerischen Verbandes für Berufsberatung SVB, 1996).

4.2.1.4. Deutsche Personality Research Form (D-PRF), 1985.

To this day the Personality Research Form (PRF), introduced in 1967 by Jackson, represents a very popular assessment tool. The German version of the inventory, D-PRF, introduced in 1985 (Stumpf et al.), is one of the most highly cited American psychological assessments, including the implementation in the studies on the achievement motive. The achievement scale of the inventory was used in most of the studies on the correlation between fantasy-based and self-report measures of the achievement motive (e.g., Brunstein & Maier, 2005; Emmons & McAdams, 1991; King, 1995; Koestner et al., 1991; Pang & Schultheiss, 2005; Schultheiss & Brunstein, 2001; Schultheiss et al., 2009; Thrash & Elliot, 2002; Woike, 1995; Woike et al., 2003).

Test construction and dimensions.

Unlike other personality measures that define personality narrowly, the original PRF measures 20 unique aspects of personality, which are based on Murray's personality theory, and is constructed according to the principles of the classical test theory. Drawing upon the extensive research and theoretical literature that had accumulated during three decades, mutually exclusive definitions of 20 personality constructs or traits were formulated and a pool of nearly 3000 items was collected. Finally, through carefully controlled procedures, a pool of more than 100 items was generated for each scale, and then only 20 items were selected for each scale on the basis of high correlation with total scale score and low

correlation with scores on other trait scales and the desirability scale (Amelang & Zielinski, 2002; Anastasi, 1988; Sarges & Wottawa, 2001).

The D-PRF was constructed using bilingual retest technique to represent the original version as closely as possible in terms of content and structure (Amelan & Zielinski, 2002; Gottwald, 2002). The questionnaire comprises 14 scales, such as Affiliation, Aggression, Dominance, Achievement, and so forth, each consisting of 16 items. In addition, the 10 items form an Infrequency scale which serves the identification of the uncooperative and careless response behavior. The questionnaire is available in two parallel forms and can be administered in both individual and group settings.

Psychometric properties.

The psychometric properties of the inventory are good enough to fulfill the methodological requirements. The internal consistency coefficients for separate scales lie between $\alpha = .66$ and $\alpha = .85$, with the medium coefficient of $\alpha = .75$ which is a rather disappointing value considering the questionnaire's elaborate construction (Amelang & Zielinski, 2002).

Numerous retest reliability analyses (test-retest and parallel forms reliability checks) speak in the favor of good stability of the D-PRF, demonstrating coefficients between $r_{tt} = .61$ and $r_{tt} = .88$ (e.g., Gottwald, 2002; Sarges & Wottawa, 2001). The standardization of the measure was carried out in a representative group of 4.363 participants, and separate norms are available for different age groups and women versus men.

Criticism.

The inventory has been used in hundreds of studies in diverse settings involving measures of traits and behaviors conceptually related to D-PRF constructs. The D-PRF manual describes many findings relevant to judgments of validity. The scales of the questionnaire prove to have high convergent validity and significant correlation with other

personality inventories. The factorial structure of the D-PRF can be interpreted in the Big Five model tradition (Amelang & Zielinski, 2002; Sarges & Wottawa, 2001; Stumpf et al., 1985).

4.2.1.5. Multi-Motive-Grid (MMG), 2000.

Test construction.

In the 70s, Schmalt (1976) developed the grid technique which combined the features of the TAT with features of self-report questionnaires. Analogous to the TAT, a series of ambiguous pictures were presented to arouse motive dispositions. Instead of the requirement to write stories, a set of statements was added to each picture. The participants were asked to mark those statements which fitted each picture best. The different picture situations (*i*) and the set of statements (*j*) yielded a matrix with $i \times j$ cells, or a grid, which is why the measure was called the grid technique (Sokolowski, Schmalt, Langens, & Puca, 2000).

As a semi-projective technique, the measure aimed at profiting from the advantages of the both self-report and projective measures while eliminating their disadvantages. For example, instead of a complicated story analysis with a scoring key, it was possible to simply count the number of the chosen statements which corresponded to the particular motive. At the same time, it was assumed that the choice of a particular statement to a particular picture cue is influenced by the unconscious motives of a person (Langens, Schmalt, & Sokolowski, 2005).

Dimensions.

At first, three types of grids for the separate measurement of the three motives were developed, in which each motive was measured with respect to its approach and avoidance tendencies. The first grid-technique was developed for the measurement of the achievement motive (AMG; Schmalt, 1976, 1999). This inventory was intended for the children of nine to 16 years old. It consisted of 18 picture cues with achievement-oriented situations. Each picture was supplemented with 18 statements.

Then, one single measure called MMG was developed for the measurement of all three motives simultaneously (Schmalt et al., 2000).

The aim of the statement selection was to find a set of statements that represents the three motive domains (achievement, affiliation and power) and their approach (hope) versus avoidance (fear) components with two statements each, for a total of 12 statements. As far as the picture choice is concerned, two pictures for each thematic domain with low ambiguity were chosen, as well as two pictures for each domain with moderate ambiguity, and two pictures with high ambiguity.

Thus, altogether the MMG consists of 14 pictures and 12 statements, resulting in 168 items. It usually takes 30 to 45 minutes to complete the MMG. Six motive scores can be calculated: Hope of Success (HS) and Fear of Failure (FF) for the achievement motive, Hope of Affiliation (HA) and Fear of Rejection (FR) for the affiliation motive, and Hope of Power (HP) and Fear of Power (FP) for the power motive. A short version of the MMG with 72 items is also available.

Psychometric properties.

The internal consistency of the six motive scores has a range from $\alpha = .78$ to $\alpha = .90$. The alpha coefficients for the HS is $\alpha = 0.84$ and for FF is $\alpha = .80$ (Sokolowski et al., 2000). The correlation between these two scales is low ($r = .17$) which means that they measure different constructs.

On the other hand, the correlations between the scales Hope of Success and Hope of Power are very high ($r = .75$), as well as between Fear of Failure and other scales measuring the fear components ($r = .65, .66$). It makes us question whether the scales really measure specific hopes and fears (Schweizer, 2006).

Results of factor analysis suggested a three-factor solution, with a general fear factor (FF, FR, FP), a factor combining the hope components of achievement and power (HS and HP), and the third factor representing HA (Sokolowski et al., 2000).

As far as construct validity is concerned, the MMG was administered together with the three subscales of the PRF (Jackson, 1967). Only nonsignificant correlations between the MMG and the PRF were obtained which indicated that the MMG did not measure explicit motives (Langens et al., 2005).

To investigate the criterion validity of the inventory, a number of studies were carried out. For example, for the demonstration of the external validity of the achievement motive, Puca and Schmalt (1999) conducted a study among male university students ($N = 160$). After the completion of the MMG, participants worked on a complex choice–reaction task. Following this, they reported on their flow experience during performance of the reaction task. It was proved that approach-oriented participants reported more flow and performed significantly better in the reaction task than their avoidance-oriented counterparts. Affiliation and power motives did make any significant contribution to the prediction of the achievement-related variables.

In a correlational study, Abele, Andrä, and Schute (1999) measured the motives of university students and looked at their social and career developments. The results indicated that participants who had stable romantic relationships scored significantly lower on Fear of Rejection and Fear of Failure scales than those who lived alone. Participants who had received an employment contract after the final examination also scored significantly lower on the Fear of Failure scale than those who had not. Other correlations proved the predictive validity of the different scales of the MMG in that the affiliation motive was predictive of interpersonal behavior, the achievement motive was predictive of career development and vocational efficiency, and the power motive predicted positive evaluation of prestige.

Criticism.

One of the advantages of the MMG is that the inventory is a standardized and well-documented technique for the measurement of the motives. Along with the paper version, a computer-based version is available (Schmalt, Sokolowski, & Langens, 2001).

If we compare the MMG with the TAT, the MMG clearly demonstrates advantages in the objectivity and reliability over the projective measurement of the motives. But the lacking support for the predictive validity of the MMG prevents us from making conclusive statements of its superiority (Schweizer, 2006). Only several studies were done to investigate the criterion and construct validity of the MMG. And it is still not clear whether the grid-technique measures the implicit motives in the same depth as the TAT-based measures. The studies investigating the positive correlations between these two types of measurement are lacking (Reinberg, 2004).

4.2.1.6. Leistungsmotivationsinventar (LMI), 2001.

The questionnaire LMI was developed in 2001 by Schuler and Prochaska to be used primarily in the organizational psychology (personnel assessment and personnel development). The goal of the authors (Schuler & Prochaska, 2001, p. 11) was “to measure proportionally all the relevant dimensions of a widely interpreted concept of occupational achievement motivation and, thus, develop an inventory, which could be used diversely, in the personality psychology research or for practical purposes” (own translation).

Indeed, LMI is widely discussed and already gained popularity as we can find information about it in many books on personality assessment (e.g., Amelang & Schmidt-Atzert, 2006; Amelang & Zielinski, 2002; Heckhausen & Heckhausen, 2007; Mechthild & Aumüller, 2007; Rheinberg, 2004; Schweizer, 2006; Stiensmeier-Pelster & Rheinberg, 2003, etc.)

Test construction.

The inventory consists of 17 inhomogeneous subscales which assess career-relevant personality traits which has something to do with the achievement theme. As the theoretical basis for the test, the authors developed and used the *union* model of achievement motivation. The theory assumes that achievement motivation is composed of core and periphery elements

with the core elements at the center surrounded by a number of the periphery elements. Thus, as the core elements mentioned frequently by motivation theorists (such as goal-setting, persistence, confidence in success) are delineated, the periphery or secondary elements (such as dominance or flow) are revealed.

Using many theories of motivation, LMI was originally constructed from an initial pool of 728 items grouped into 38 facets of achievement motivation. Through a series of pilot tests, analyses of the dimensions, along with several administrations of the items to various samples, the pool was reduced to a final set of 170 items grouped into 17 facets. Items that pilot test participants perceived to be too invasive or unacceptable were dropped. In addition, items with low inter-item correlations within facets were also dropped (Schuler & Prochaska, 2000). Hence, LMI was developed using both rational and empirical methods.

The inventory is available in two forms: full (170 items) and short version (30 items). Both versions are to be responded by examinees on a seven-point Likert format.

17 dimensions of the full version:

- Compensatory Effort: willingness to expend extra effort to avoid failure.
- Competitiveness: drive to win and be better and faster than others.
- Confidence in Success: belief in capacity to achieve even difficult goals stemming from a belief in own knowledge, skills, and abilities.
- Dominance: tendency to exercise power over others, take initiative and control over activities.
- Eagerness to Learn: thirst for knowledge and striving to learn new things, even in the absence of external reward.
- Engagement: capacity to maintain a high level of activity, usually work-related, for long periods with little rest.
- Fearlessness: degree of absence of a fear of failing at difficult tasks.

- Flexibility: willingness to accept changes and enjoyment of challenging new tasks.
- Flow: capacity to maintain long periods of concentration without being distracted; likelihood of becoming lost to the outside world and absorbed in a task.
- Goal Setting: tendency to set goals and make long-term plans for achieving these.
- Independence: preference for making own decisions and working at own pace, and tendency to take responsibility for one's own actions.
- Internality: attribution of own success to own actions and efforts rather than to situational variables or luck.
- Persistence: tenacity and energy given to task completion.
- Preference for Difficult Tasks: tendency to seek out challenging rather than easy tasks and desire to seek greater challenges once earlier ones have been met.
- Pride in Productivity: enjoyment and satisfaction derived from achievement, from doing one's best, and from improving on performance.
- Self-Control: capacity to delay gratification and to organize oneself and one's work.
- Status Orientation: desire to gain high status in one's personal life and to progress professionally.

Each scale has 10 items. The items are, for the most part, couched in a work context.

Dimension specific scores can be derived as well as an overall score. With the help of numerous standardization tables it is possible to transfer the raw score into standard values, stanine values, and percentile ranks. For the interpretation of the results the manual provides short descriptions of the inventory dimensions, although only high values of the facets are explained. The inventory is translated into other languages. So far, it is available in English and Hebrew.

Psychometric properties.

The internal consistency of the inventory for the total score lies between $\alpha = .88$ and $\alpha = .90$ (depending on the sample) and ranges from $\alpha = .60$ to $\alpha = .90$ for single scales. Retest

reliability is $r_{tt} = .86$ for the total score and ranges from $r_{tt} = .66$ to $r_{tt} = .82$ for individual scales.

As far as validity is concerned, the authors provide data about intercorrelations between the scales, factorial, construct, and criterion validity.

To start with, the average scale intercorrelation value is .34. In general, all the scales are somehow intercorrelated, with the highest correlations between the scales which are logically connected, for example, Dominance and Confidence in Success. Thus, moderate correlations between all the facets ensure the use of the overall score of the inventory as a measure of the achievement motive.

To clarify the number and structure of the basic components of the achievement motive, the authors carried out factor analysis. Research using both the original LMI in German (Schuler & Prochaska, 2001) and its English version Achievement Motivation Inventory (AMI [Schuler, Thornton, Frintrup, & Mueller-Hanson, 2004]) revealed three main factors accounting for 63% of the variance in intercorrelations among the scales (Byrne et al., 2004; Schuler & Prochaska, 2000). The first factor was labeled Ambition and includes the concepts of pride in one's productivity, status orientation, competitiveness, compensatory effort, goal-setting, engagement, and flow. The second factor labeled Independence includes concepts such as self-reliance, flexibility, fearlessness, dominance, confidence in success, and preference for difficult tasks. The third factor called Task-Related Motivation involves self-control, persistence, and internality. Byrne et al. (2004) studied this first-order factors structure in samples across three countries (Germany, Israel, and the U.S.), and the factor structure and pattern of factor loadings were nearly equal across the three samples, indicating a cross-cultural equivalency.

The AMI was used in the study conducted by Woo, Gibbons, and Thornton (2007) among students of the U.S. universities and adult workers in a food processing facility. The study aimed at researching age differences in achievement motivation, and the factor structure

of the inventory was analyzed. All the facets of the AMI were organized into a three-factor model, similar to the above mentioned structure. The factor Independence was renamed into Self-Assurance and the factor Task-Related Motivation—into Self-Control. The results showed that students had higher levels of Ambition, while adults had higher levels of Self-Assurance and Self-Control, indicating age differences in the demonstration of the achievement motive.

To study the construct validity of the inventory, the authors analyzed the correlations between LMI and NEO-Fünf-Faktoren-Inventar (NEO-FFI [Borkenau & Ostendorf, 1993]). As expected, high correlations were found between the overall score of LMI and the scale Conscientiousness ($r = .57^{**}$, $p < 0.01$). Some separate scales of LMI also demonstrated high correlations with the facets of NEO-FFI which guarantees that the scales of LMI can be integrated into the Big Five model.

With the regard to the criterion validity the authors report numerous correlations with different achievement indicators, such as age and gender, academic (e.g., final grades, achievement satisfaction, honors, etc.) and occupational criteria (e.g., educational level, work experience, annual salary, position in the hierarchy, etc.), and performance-related activities (e.g., participation in competitions, number of memberships, etc.). The numerous correlations are mostly not significant with exception of several criteria. For example, final grades correlate with some dimensions of LMI (e.g., Dominance, Fearlessness, Independence), educational level is correlated with the scale Eagerness to Learn ($r = .35$, $p > .30$), position in the hierarchy is correlated with the scale Dominance ($r = .43^*$, $p < .05$), and, finally, the number of memberships is correlated with the scale Dominance ($r = .44^{**}$, $p < .01$).

Obviously, further studies are necessary to better validate the inventory. Attempts made in this direction turned out to be successful. Several studies reported earlier (e.g., Trapmann, 2008; Trapmann et al. 2005, 2007, see Chapter 3) indicated that different dimensions of LMI demonstrated a broad predicting validity, that is, significant correlations

were obtained between the achievement motive construct and different academic success criteria.

Short version (K-Version).

The short version of LMI consists of 30 items which were chosen to perfectly represent the general score of the full version. The answer options lie in the range of seven-scale from 1 (*doesn't not apply to me at all*) to 7 (*applies to me fully*). It is possible to transform the final score into raw and standardized final score. The psychometric properties of LMI-K are very good: internal consistency $\alpha = .94$, split-half reliability $r = .94$, retest reliability $r_{tt} = .78$, correlation of the short version with the full version $r = .93$.

Criticism.

LMI is an objective inventory, which measures a wide variety of extensively reliable and time-stable components of achievement motivation (Amelang & Schmidt-Atzert, 2006; Bühner, 2002; Schmidt-Atzert, 2001; Schweizer, 2006; Wall, 2003, etc.).

The inventory is widely discussed and, like other questionnaires, has its advantages and disadvantages.

First of all, the theoretical model which served as a basis for the inventory got a lot of criticism. It is still to clarify which of the 17 subscales is based on which concept and under which hypothesis achievement motivation can be formulated (Rheinberg, 2004).

The differentiation into 17 dimensions can be viewed as both a chance and a problem (Schmidt-Atzert, 2001). On the one hand, such a number of independent predictors can help determine particular personality traits which are the best predictors of good performance at work, school, or in studies. On the other hand, the same number of dimensions leads to big problems when we start analyzing the testees' profiles. Altogether, it is possible to do 136 individual comparisons. So the chance of doing an incidental finding is high.

Such number of dimensions also leads to the low interpretation objectivity which is one of the minuses of the inventory (Bühner, 2002; Schmidt-Atzert, 2001). It is possible to do

a broad variety of possible interpretations of concrete profiles. And there are only three examples of profiles in the manual!

The test economy also suffers from the big number of dimensions. If LMI is implemented often, it is advisable to use the computer version of the inventory because the real time for the scoring can reach 30-45 minutes, and not the five minutes declared in the manual by the authors (Bühner, 2002). The short version of the inventory is a good alternative and advisable to use in cases when an overall score of the achievement motive has to be obtained at low time costs (Kieschke, 2006).

Some other statements made by the developers can also be doubted. For example, the authors ensure that the inventory is low correlated with the social desirability which can be questioned, as the sample, from which the data was collected, was not in the situation of the personnel selection (Bühner, 2002). It is also advisable for the future developments to create separate norms for different goals—personnel selection and personnel development (Schmidt-Atzert, 2001).

Among the pluses of the inventory can be mentioned high procedural objectivity, high internal consistency, and retest reliability. The construct validity is good, because the LMI scales are easily integrated into the Big Five model (Amelang & Schmidt-Atzert, 2006; Schweizer, 2006, etc.). Factorial validity also offers interesting perspectives for the future improvements of the inventory. Numerous standardization tables make LMI suitable for the use in individual diagnostics (Kieschke, 2006).

Despite all the criticism and obvious drawbacks of the measure, it is considered to be an event and no other alternatives of the kind exist on the market. It is the only scientifically developed inventory which measures the achievement motive in such depth and breadth (Hossiep & Mühlhaus, 2005).

4.2.1.7. New approach to the achievement motive measurement by Schultheiss and colleagues.

Schultheiss et al. (2009) offered a new approach to the construction of self-report measures of the achievement motive and proposed that implicit and explicit motive measures might correlate close to zero because the methods that are typically used for their assessment differ methodologically.

A closer examination of the PSE measure of implicit motives and popular questionnaire measures of explicit motives reveals two major methodological differences between both types of instruments. First, the coded content of stories written on the PSE depends critically on specific picture cues (Pang & Schultheiss, 2005; Schultheiss & Brunstein, 2001). In contrast, frequently used questionnaire measures of motivational needs, such as D-PRF (Stumpf et al., 1985), use largely decontextualized items that assess how a person behaves in general but not in response to specific situational contexts.

The second difference between implicit and explicit motive measures concerns the way in which motivational responses manifest themselves. For the content coding of PSE stories, researchers have identified specific themes that indicate the presence of an aroused or chronic motivational need. Thus, for each motive, specific behaviors and responses of story characters are carefully distinguished and contribute to the overall motive score for a given picture story. In contrast, self-report measures of motivational needs are usually not constructed to map onto the PSE coding categories for a given motive and are, therefore, prone to emphasize some aspects of a motivational need much more than others.

To research this new line of thinking, attempts were made to develop a new measure of the explicit achievement motive with items that would correspond directly to the categories from the chosen coding system. For example, Schultheiss and Murray (2002) developed a matched-content measure (cited in Thrash et al., 2007), the content of which corresponded directly to the categories of Heckhausen's coding system (1963). The measure comprised 10

items. Schultheiss et al. (2009) also developed a matched-content measure called PSE Questionnaire (PSE-Q) with the items which covered all the content categories of the coding system by Winter (1994). The measure consisted of 112 items (eight pictures x 14 items).

The results obtained from the studies conducted to research these new measures appeared to be quite contradictory.

Thrash et al. (2007) examined the correlation between several achievement motive measurement techniques: implicit measure PSE and explicit measures, such as deCharms measure of explicit need for achievement (deCharms et al., 1955), EPPS (Edwards, 1959), AMS (Gjesme & Nygard, 1970), and the matched-content measure by Schultheiss and Murray (2002). As always, no significant correlations were found between PSE and standard explicit measures of the achievement motive, namely, deCharms, EPPS, AMS ($r = .00$, $r = .00$, and $r = .02$, all *ps, ns*). The new matched-content measure, as hypothesized, showed a significant variance overlap with other self-report measures (e.g., $r = .35^{***}$, $p < .001$ with deCharms measure, $r = .25^{***}$, $p < .001$ with EPPS, $r = .33^{**}$, $p < .01$ with AMS). The correlation between PSE and the matched-content measure of the explicit need for achievement turned out to be lower, though also significant ($r = .17^*$, $p < .05$).

Thus, the authors found that implicit *n* Achievement was uncorrelated with several established measures of the explicit need for achievement but was significantly correlated with a new explicit measure that directly matched the implicit measure in content. Thrash et al. (2007) conclude that it is likely that no amount of methodological refinement would yield a strong overall correlation between implicit and explicit motives, given evidence of their discriminant validity. The findings from this study suggest that implicit and explicit achievement motives are distinct but related constructs.

Schultheiss et al. (2009) examined the correlation between three implicit motives (power, achievement and affiliation) measured with a PSE and explicit motives, measured with a new matched-content measure PSE-Q (Schultheiss et al., 2009) and PRF (Jackson,

1967). As a result, PSE and PSE-Q showed little variance overlap in the measurement of the achievement motive ($r = .11$, *ns*). Even lower correlation was obtained between PSE and PRF in the achievement motive domain ($r = .08$, *ns*). The correlation analysis of the PSE-Q and the PRF revealed that the two instruments shared a significantly higher portion of variance: $r = .20^{**}$, $p < .01$, for the power motive domain and $r = .14$, *ns*, for the achievement motive domain.

The results demonstrated that low correlations, normally obtained between self-report and projective measures of the same motive, are not due to different measurement techniques. The same effect is also observed when the explicit measure of the motive is made as similar as possible to the method of implicit motive assessment. Even when participants were shown the same picture cues they had previously written imaginative stories about and were asked to describe what they would try to do if they were one of the people in the depicted situation, using response items that represented each of the content coding categories applied to the scoring of the written stories, there was little convergence between the scores obtained with both approaches.

Thus, the statistical independence between implicit and explicit motives appears to be genuine. Still the authors admit that their research had several limitations, for example, the unexplored validity of the PSE-Q and the usage of the Winter's (1994) integrated coding system. Further research in this area is necessary, for example, exploring whether the findings can be replicated if implicit motives are assessed using the original coding systems, for example, by McClelland et al. (1953).

4.2.2. Important psychometric properties of self-report measures.

The use of self-report questionnaires in personality assessment has been widely discussed because the psychometric properties of self-report measures positively stand out in

comparison with other types of measurement techniques. On the one hand, self-report methods are more economical in terms of administration and scoring than the projective methods. On the other hand, they demonstrate higher levels of objectivity, test–retest reliability, and internal consistency (e.g., Koestner et al., 1991; Razavi, 2001).

But the self-report measures can also be criticized for some of their properties (Razavi, 2001). The most serious criticisms are raised in the context of their format: Even though the tests are of satisfactory reliability, subjects may be unaware of, or unable to report on, their motivational states (Entwisle, 1972). Self-report measures reflect only self-representations of the testees and the results of the assessment are dependent on the person's accurate knowledge of his or her attitudes, beliefs, feelings, and behavior, and on the person's willingness to disclose his or her knowledge of beliefs and feelings (e.g., Amelang & Schmidt-Atzert, 2005; Rheinberg, 2004).

Different response distortions also get a lot of criticism. Response distortions may be broadly grouped into two categories: response styles and response sets (Anastasi, 1988; Lanyon & Goodstein, 1971). Response styles imply bias in a particular direction regardless of the content of the test items, and include acquiescence, extreme and central tendency responding, and negative affectivity bias. In contrast, response sets are generally related to content and reflect a conscious or unconscious attempt on the part of the respondent to create a certain impression (Razavi, 2001).

The first critique point is the tendency to respond positively (*true* or *yes*), regardless of the content of the question, referred to as acquiescence response style. This tendency might denote a form of social conformity. One of the ways to counteract this bias is to balance the positively- and negatively-keyed items, such that the bias could be detected through inconsistent responses (e.g., Anastasi, 1988; Lanyon & Goodstein, 1971; Mummendey, 2005). On the other hand, to reduce the bias the balancing could be coupled with special

instructions to participants, as well as caution in the processing and interpretation of data (Razavi, 2001).

Extreme and moderacy response styles operate in measures which require the use of a rating scale and reflect the tendency to respond consistently using particular sections of the scale. Studies indicate that extreme response style has considerable reliability over time and between different kinds of stimuli, and can be moderated by gender with women consistently giving more extreme positive ratings than men (Crandall, 1973). Extreme responding can be controlled by altering the response format (Razavi, 2001). The moderacy tendency to prefer the middle categories or answers like *I do not know* can be influenced by the too complicated items of the questionnaire, thus, the answer format should be consistent and questions easy to understand (Rammstedt, 2006).

But the most common drawback of the questionnaires, as the literature shows (e.g., Entwisle, 1972; Gatewood & Feild, 2007; Hossiep, 2007; Mummendey, 2005; Razavi, 2001; Trapmann, 2005), is that they are highly susceptible to *faking*. Deliberate misrepresentation may take the form of faking good (making a positive presentation of oneself), the most frequently studied form of socially desirable responding, or making things look worse than they are. The social desirability bias becomes particularly important in assessment situations where the subject knows he or she is to be evaluated. In evaluative circumstances, it is very easy for the most naive of subjects to fake responses to items.

For example, the study by Furnham and Henderson (1982) examined the susceptibility of the five widely-used self-report measures to response set bias. The participants were asked either to fake good, bad, or mad (giving an impression of mental instability), or respond honestly. The study demonstrated that self-report measures of personality are highly sensitive to response bias, and the subjects can and do differentiate between faking good, bad, and mad.

Viswesvaran and Ones (1999) also examined whether individuals can fake their responses to a personality inventory if instructed to do so. Particularly, in the metaanalyses,

they compared the fakability of the Big Five dimensions of personality and the fakability of social desirability scales. Across 51 studies, fakability did not vary by personality dimension: All the Big Five factors were equally fakable. The results revealed that if instructed to fake good, the respondents were able to change their responses by almost half a standard deviation. Personality inventories were more susceptible to fake bad instructions than to fake good instructions. Finally, of all the scales investigated, social desirability scales were the most susceptible to response distortion under faking instructions.

However, social desirable responding can be viewed from two scientific points of view. The first tradition distinguishes between self-deception, the tendency to give favorably biased but honestly held self-descriptions, and impression management, the tendency to give favorable self-descriptions to others. The second tradition distinguishes enhancement, the claiming of positive attributes, from denial, the repudiation of negative attribute (e.g., Paulhaus, 1984; Paulhaus & Reid, 1991). Among them, the most threatening is impression management, and it is recommended that it be controlled in self-reports of personality (Paulhaus, 1984).

Because different response distortions seriously threaten the validity and reliability of the measures, various methods have been invented to control the effects of the social desirability. For example, items can be carefully chosen and constructed in such a way as to decrease the questionnaire transparency (Mummendey, 2005). Instructions can include a warning that faking may be detected (Gatewood & Reidl, 2007). Finally, many authors make use of the control or lie scales which allow for statistical control of the response bias (Mummendey, 2005; Razavi, 2001) and proved to be able to detect both positive and negative fakers (Furnham & Henderson, 1982).

Traditional criticisms of self-report methodologies, especially response biases, must be therefore taken into account by the construction of questionnaires, as well as by the analysis and interpretation of the data derived from them.

4.3. Importance of Both Types of Measurement

Thus, it appears that there will be no winners in the dispute about which measurement technique is more suitable for the achievement motive measurement. As Meyer (1996) states: recognizing the limitations and biases associated with each personality assessment method and understanding the ways in which each method is sensitive to different external realities would help to understand how two or more of these incomplete and imperfect tools can be used together to gain a more accurate picture of clinical phenomena (p. 560-561).

Spangler (1992) also comes to the conclusion that “both TAT and questionnaire measures of motives have an important role in understanding and predicting human behavior” (p.151).

Rheinberg (2004) conclude that if we want to get a full picture of the participants’ achievement motivation profile, we cannot get away with any of the two kinds of measurement.

CHAPTER 5. CURRENT STUDY

5.1. Goals of the Study

5.1.1. Construction of a new questionnaire for the measurement of explicit achievement motive.

The first goal of the current study is to explore the new line of thinking in the measurement of implicit and explicit motives initiated by Schultheiss et al. (2009) and Thrash et al. (2007). The authors argued that what is needed to fairly test the assumption that implicit and explicit needs are statistically independent, is a measure of explicit motives that matches the PSE measure both in terms of the specific situational cues in whose context an item can be endorsed and in terms of the specific thematic categories represented by the response items.

In this research, this issue is addressed by assessing the motivational achievement needs at the implicit level with a PSE and at the explicit level with a carefully matched PSE Questionnaire (PSE-Q). On the PSE-Q, participants can endorse self-descriptive items that cover the main content categories of the content coding system which was used for implicit achievement motive assessment (McClelland et al., 1953). The choice of the content coding system is based on the suggestion by Schultheiss et al. (2009) who stressed that it may be worth exploring whether their findings can be replicated if implicit motives are assessed using the original coding systems (e.g., McClelland et al., 1953, in case of the achievement motive).

Table 5 depicts the subcategories from the scoring key by McClelland et al. (1953) which are represented in the PSE-Q. In line with improvements made by Blankenship et al. (2005), the subcategories Nurturant Press (*Nup*) and Achievement Thema (*Ach Th*), as well as Block to Achievement (*B*), are not measured in this questionnaire (see pp. 88-89 of this manuscript for more details).

Table 5.*Items of the PSE-Q Representing Content Coding System by McClelland et al. (1953)*

Subcategory	Subcategory	Subcategory
Full Name	Abbreviation	Item
Competition with a standard of excellence	<i>AI 1</i>	In dieser Situation möchte ich besser sein als alle anderen.
Unique accomplishment	<i>AI 2*</i>	Ich würde keine einzigartigen Leistungen erbringen, da es um alltägliche Probleme geht (-).
Long-term involvement	<i>AI 3</i>	Es wäre mir wichtig, durch mein Handeln, neue Ideen zu bekommen oder neue Kenntnisse zu erwerben.
Stated need for achievement	<i>N</i>	Ich möchte das vorhandene Problem lösen und würde mein Bestes dafür geben.
Successful Instrumental Activity	<i>I+</i>	Ich würde behutsam und konzentriert arbeiten, um das vorhandene Problem zu beheben.
Unsuccessful Instrumental Activity	<i>I-*</i>	Ich würde mir keine besondere Mühe geben, so viel wie möglich aus dieser Situation zu lernen (-).
Positive Anticipatory Goal State	<i>Ga+</i>	Ich würde erwarten, dass das Gelernte für mich Sinn ergibt.
Negative Anticipatory Goal State	<i>Ga-*</i>	Es würde mir nicht sehr viel ausmachen, wenn der Auftrag ergebnislos ausgeführt wird (-).
Positive Affective State	<i>G+</i>	Ich wäre sehr froh, wenn meine guten Leistungen in dieser Situation anerkannt werden.
Negative Affective State	<i>G-*</i>	Es wäre mir gleichgültig, wenn ich den Sachverhalt nicht verstehe (-).

Note. * The sub-categories *AI2*, *GA-*, *I-* and *G-* are negatively coded.

This set of items is presented in a random order along with each of the picture cues used in the PSE, and the participants are asked to use the items to describe what they would try to do if they were one of the people in the picture cues. Thus, the PSE–Q closely matches the PSE in terms of cue characteristics and response dimensions and, therefore, makes it possible to explore the degree of variance overlap between commensurate measures of the implicit and explicit achievement motive.

Another point of interest is the variance overlap of both PSE and PSE–Q with the popular self-report measure of the explicit achievement motive, LMI-K (Schuler & Prochaska, 2001). LMI is widely researched and validated (see pp. 108-114 of this manuscript for more details). The short version of LMI consisting of the items which were chosen to perfectly represent the general score of the full version, was never used before in the studies of correlation between implicit and explicit achievement motives. The short version of the inventory is a good alternative and advisable to use in cases when an overall score of the explicit achievement motive has to be obtained at low time costs.

The final interesting correlation which can be examined in the group of students is the prediction of academic success (measured with grade point average [GPA]) with the help of both projective and self-report measures of the achievement motive.

5.1.2. Choice of new picture cues for PSE.

The second major goal of this study is the introduction of new picture cues for the measurement of implicit achievement motive (see pp. 76-81 of this manuscript for an overview of the currently available picture cues). Schultheiss and Brunstein (2001) studied six of the pictures commonly used in motivation research and found that only two of them were

good cues for *n* Achievement. In order to increase the number of pictures available, the present study introduced four new picture cues for eliciting implicit achievement motive.

Many authors come to the conclusion about the importance of the research on new picture cues (e.g., Schultheiss & Brunstein, 2001). The experts recommend using pictures that are similar to the situation in which dependent variables are assessed (Pang, 2010b; Schultheiss & Pang, 2007). It is also recommended that new picture cues are complemented with already validated PSE cues to minimize the risk of obtaining zero findings. Pictures should be with sufficient amount of motive imagery but at the same time ambiguous, providing some cues for other motives.

The participants of this study are students (some of them – working students) and, thus, the new picture cues are introduced to excite the achievement motive in academic and work contexts. It should also be interesting to introduce the new picture cues which would be both male- and female-oriented. Most picture cues which has been used in the research until now are mostly male-oriented though more and more women choose to pursue careers and value achievement (e.g., Weiner, 1984).

5.2. Method

5.2.1. Sample / Participants.

Participants of this study were two groups of students. The first group of testees ($n_1 = 38$) were undergraduate students enrolled in Business Psychology Bachelor program at University of Applied Management, Erding (FH Erding). The university follows a semi-virtual educational concept which allows the students to combine participation in onsite phases three times each semester for one week, and the use of the internet and the learning

platform to study online during the time in between. Due to such flexible schedules many students manage to combine a full-time job and studies. All participants of the first group took part in a Personality Psychology course during which the recruitment took place. Students participated in the study voluntarily and ranged in the age from 18 to 48 ($M = 27.42$, $SD = 7.81$).

The second group of testees ($n_2 = 96$) were psychology students of the Ludwig-Maximilians-Universität (LMU Munich). They were recruited in several seminars and also took part in the study voluntarily. Some of them got a certificate of test person hours at request. The testees ranged in the age from 18 to 45 ($M = 23.89$, $SD = 5.88$).

5.2.2. Material / Personality measures.

5.2.2.1. *Implicit need for achievement.*

Implicit *n* Achievement was assessed by having participants write imaginative stories about three picture cues and having the stories coded for motivational content. Two sets of new picture cues depicting people in different achievement situations in academic and work contexts were probed in this study. The description of the two sets is presented in Table 6.

Table 6.

Two Sets of Picture Cues for the Arousal of Implicit Achievement Motive

Set 1	Set 2
1a) girl with a laptop	2a) student and professor
1b) student at an information board	2b) girl with a newspaper
1c) women in laboratory*	2c) boxer*

Note. Picture cues 1a, 1b, 2a, 2b – new picture cues, probed in the current study (can be found in Appendix A); Picture cues 1c* and 2c* - old picture cues, are widely researched and proved to be a high pull for the achievement motive (pp. 78-79 of this manuscript).

Participants worked on a PSE following standard instructions for computer administration (Atkinson, 1966d; Langens & Schüler, 2003; Lundy, 1988; Pang, 2010b; Schultheiss & Pang, 2007; Smith et al., 1992). Each picture was shown for 20 s, and then the participants had to proceed with writing the stories. Participants were instructed to type their stories directly into windows on the screen, with the guiding questions appearing to the left of the writing window. Instead of writing the whole story as a single unit, the guiding four standard questions asked to the picture cues were given a separate paragraph for the answers according to the new improvements suggested by Blankenship et al. (2005, 2006) and Blankenship and Zoota (1998). Participants were not time-limited for writing the stories.

The resulting PSE protocols were content-coded for achievement motivation according to the Scoring Manual for the Achievement Motive by McClelland et al. (1953) in correspondence with the items of the PSE-Q which were based on the same scoring system. In line with improvements made by Blankenship et al. (2005), the subcategories Nurturant Press (*Nup*) and Achievement Thema (*Ach Th*) were not coded. The two subcategories, Personal Obstacle (*Bp*) and Environmental Obstacle (*Bw*), were combined into one subcategory—Block to Achievement (*B*). The scorer had previously exceeded 85% interscorer agreement on calibration materials prescored by an expert that are contained in Blankenship et al. (2005), McClelland et al. (1953), Smith and Feld (1966), Smith and Franz (1992).

Before all the statistical analytic procedures were carried out, the participants' protocol length was determined by counting the number of words for each story. Then PSE protocol length for each story was checked for the correlation with participants' score for *n* Achievement. Because protocol length of each story was correlated with participants' scores for the corresponding *n* Achievement: $r_{s1}(134) = .43^{**}$, $r_{s2}(133) = .39^{**}$, $r_{s3}(132) = .41^{**}$,

all $ps < .01$, the influence of protocol length from participants' motive scores was removed by converting the residuals to z scores according to the following formula:

Table 7.

Formula for Converting Implicit Achievement Motive Scores into Z Scores

$$Z \text{ Score} = nAch - \{N \times [R \times (SD nAch \div SD N)]\}$$

$nAch$ = actual n Ach score

N = Number of words

R = correlation between actual n Ach score and Number of words

$SD nAch$ = standard deviation of actual n Ach

$SD N$ = standard deviation of Number of words

Note. Taken from “*Methodological Considerations: Steps in Research Employing Content Analysis Systems*”, by C.P. Smith, S.C. Feld, & C.E. Franz, in “*Motivation and Personality: Handbook of Thematic Content Analysis*”, by C.P. Smith (Ed.), 1992, New York, NY: Cambridge University Press, p. 534.

5.2.2.2. *Explicit need for achievement.*

To assess participants' explicit achievement motives, two self-report measures were administered.

As the first questionnaire, LMI-K (Schuler & Prochaska, 2001) was administered. The short version of the LMI consists of 30 items, which were chosen to perfectly represent the general score of the full version. The answer options lie in the range of seven - scale from 1 (*doesn't not apply to me at all*) to 7 (*applies to me fully*). The final raw scores were transformed into standardized final scores.

As the second questionnaire, a new matched-content measure PSE-Q developed by the author of this manuscript was administered (Appendix B). The content of the measure

corresponds directly to the categories of McClelland et al. (1953) coding system. The questionnaire comprises 10 items, four of them are negatively coded. The same 10 items were asked to each picture cue, mixed in a random order, thus, three picture cues produced 30 items in general. The items 2, 3, 7, 8, 14, 16, 18, 20, 25, 26, 27 and 30 were recoded. Participants responded to each item using a 1 (*not at all true of me*) to 5 (*completely true of me*) scale. Final raw scores were obtained.

5.2.2.3. *Academic success.*

Academic success of the participants in this study was measured with the help of their grades (GPA). At the end of the survey the participants were asked about their GPA by the time of testing.

5.2.3. Procedure.

As suggested by Lundy (1988) participants completed three personality measures in one testing session—PSE, LMI-K, and PSE-Q. The same order was used by Schultheiss et al. (2009). As recommended by Schultheiss and Pang (2007), tests were administered online (through the web-site www.soscisurvey.de) to produce as little pressure on the participants as possible. The students got an e-mail with directions how to fill in the questionnaires.

The two sets of picture cues were randomly assigned to the testees as they were constructed in such a way as to elicit the equal amount of achievement imagery. Set 1 was completed by 58 testees, and Set 2 was completed by 73 testees. Table 8 presents web-site links to three personality measures of the achievement motive.

At the beginning of the first personality measure (PSE) the students were instructed that their data will be interpreted with anonymity and they have the right to interrupt the completion of the tests any minute. $N = 132$ participants fully completed the first measure,

PSE; $N = 133$ participants fully completed the second measure, LMI-K; and $N = 127$ participants finished the last measure, PSE-Q. At the end of the third inventory (PSE-Q) the participants were asked about their GPA ($N = 126$).

Table 8.

Web-site Links to Three Personality Measures of the Achievement Motive

Test Title	Set 1	Set 2
PSE	https://www.soscisurvey.de/story/?q=1	https://www.soscisurvey.de/story/?q=2
LMI-K	https://www.soscisurvey.de/LMIK/?q=LMI-K	
PSE-Q	https://www.soscisurvey.de/PSE/?q=Q1	https://www.soscisurvey.de/PSE/?q=Q2

Finally, the participants from both groups got an individual feedback with the short overview of the administered achievement motive measures. Based on the extensive literature overview of the implicit/explicit achievement motive congruence (see pp. 56-68 of this manuscript for more details) clear feedback profiles were developed (Appendix C). They took into consideration different combinations of implicit/explicit achievement motive scores, and the participants got a clear idea of what the combination of scores from three different achievement motive measures means.

5.2.4. Hypotheses.

The two known studies (Schultheiss et al., 2009; Thrash et al., 2007) aimed at investigating the new line of thinking and studying the correlation between different achievement motive measurement techniques (PSE, self-report measures, and PSE-Q) appeared to have quite contradictory results. They are shortly summarized in Table 9.

Table 9.

Intercorrelations for Content-Coding (PSE), Traditional Self-Report, and Matched-Content (PSE-Q) Measures of Achievement Motivational Needs.

Questionnaire	Thrash et al. (2007)			Schultheiss et al. (2009)		
	1	2	3	1	2	3
1. PSE	—			—		
2. Self-report measure(s)	.00 - .02	—		.08	—	
3. Matched-content measure	.17*	.33** - .35***	—	.11	.14	—

Note. Yellow – correlation between PSE and self-report measure(s); green – correlation between PSE and matched-content measure; blue – correlation between self-report and matched-content measures.

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

Based on these two studies, the present study aims at proving three hypotheses:

Hypothesis 1. LMI-K (self-report measure of the explicit achievement motive) will correlate significantly and positively with the PSE-Q (matched-content measure of the explicit achievement motive).

Hypothesis 2. The correlation between LMI-K (self-report measure of the explicit achievement motive) and the PSE (projective measure of the implicit achievement motive) will be nonsignificant.

Hypothesis 3. The correlation between the PSE (projective measure of the implicit achievement motive) and the PSE-Q (matched-content measure of the explicit achievement motive) will be positive and significant.

The new picture cues chosen for this study meet the general requirements to the cue characteristics that a researcher should consider in the construction of the PSE. It is to believe that they possess enough cue strength, cue ambiguity, universality, relevance, and extensity.

Hypothesis 4. New picture cues will elicit adequate amount of the implicit achievement imagery compared to the old picture cues and, thus, can be used in the implicit achievement motive research.

Finally, the prediction of academic success with the help of measures of the achievement motive is researched. Literature review in this manuscript supports the idea that in general it is inappropriate to compare the predictability of the PSE and questionnaire measures of the achievement motive regardless of the type of outcome predicted. Extensive research of the topic indicates that implicit motives foresay long-term spontaneous behavioral trends over time, such as entrepreneurial success or career success. On the other hand, explicit need for achievement can help foresay an immediate and situation-specific behavior, such as learning performance in a laboratory situation. Explicit need for achievement is also usually highly correlated with the academic performance criteria, such as grades.

Hypothesis 5. The correlation between LMI-K and outcome (GPA) will be negative and significant.

Hypothesis 6. The correlation between the PSE and outcome (GPA) will be negative and nonsignificant.

5.3. Results

5.3.1. PSE–Q factor structure and scale reliability.

As a first step, to examine the reliability of the questionnaire, the reliability analysis was carried out for the three groups of items separately, as well as for the whole set.

In general, the results indicate that the reliability of the three groups of items are comparable and lie in the range between $\alpha = .79$ and $\alpha = .81$ which means that the questionnaire has a high reliability. According to the corrected item-total correlation Items 1, 9, 15, 28, and 29 could have been deleted to increase the reliability of the questionnaire.

Table 10.

Reliability Analysis / Item-Total Statistics of Items 1 through 10

	<i>M</i>	<i>SD</i>	<i>r_{it}</i>	α if item deleted
i1	3.10	1.17	.31	.78
i2	4.38	.89	.50	.75
i3	4.10	.98	.51	.75
i4	4.20	.84	.56	.75
i5	4.25	.93	.49	.75
i6	4.16	.85	.49	.75
i7	3.50	1.06	.40	.77
i8	4.20	.99	.46	.76
i9	4.11	.86	.31	.78
i10	4.04	.94	.50	.75

Table 11.*Reliability Analysis / Item-Total Statistics of Items 11 through 20*

	<i>M</i>	<i>SD</i>	<i>r_{it}</i>	α if item deleted
i11	4.16	.97	.63	.76
i12	3.87	1.03	.43	.78
i13	3.69	1.28	.58	.76
i14	4.24	1.04	.33	.79
i15	3.09	1.36	.31	.80
i16	3.69	1.21	.48	.78
i17	4.03	1.01	.50	.78
i18	4.28	1.02	.46	.78
i19	3.92	1.09	.61	.76
i20	4.01	1.13	.44	.78

Table 12.*Reliability Analysis / Item-Total Statistics of Items 21 through 30*

	<i>M</i>	<i>SD</i>	<i>r_{it}</i>	α if item deleted
i21	4.47	.79	.41	.57
i22	4.10	1.07	.54	.53
i23	4.32	.99	.52	.54
i24	4.58	.76	.59	.55
i25	4.31	1.04	.44	.55
i26	4.33	.97	.44	.55
i27	4.45	.96	.41	.56
i28	3.92	1.21	.22	.58
i29	4.43	4.28	.19	.81
i30	4.32	.98	.37	.56

To examine the dimensional structure of the PSE-Q, exploratory factor analysis was conducted by means of principal component technique and orthogonal rotation of the factors using varimax rotation. Three sets of questions, asked to three different picture cues, were analysed separately.

The KMO value for three sets varied from .74 to 0.79 which is very good. Bartlett's test was highly significant ($p < .001$), and we can be confident that factor analysis is appropriate for these data.

Principal component analysis after rotation ended up in the same two-factor solution for three separate sets of questions. The decision criteria included two determinants: (1) set the number of the expected factors as two to differentiate between the items which represent the presence or absence of the strong explicit achievement motive, and (2) each first-order factor should be determined by items with greater than 0.40 factor loading on that first-order factor. The results of the rotated component matrixes are presented in Tables 13, 14, and 15.

Table 13.

Rotated Factor Loadings of PSE-Q Items 1 through 10

Item	Factor 1	Factor 2
1. Standard of Excellence 1		.55
2. Negative Affective State	.77	
3. Unsuccessful Instrumental Activity	.64	
4. Stated Need for Achievement	.46	.52
5. Positive Affective State		.64
6. Standard of Excellence 3		.63
7. Standard of Excellence 2-	.60	
8. Negative Anticipatory Goal State	.77	
9. Positive Anticipatory Goal State		.66

10. Successful Instrumental Activity		.61
Eigenvalue	2.38	2.30
% of variance	23.77	22.98

Note. PSE–Q = questionnaire version of the Picture Story Exercise. Items loadings on designated factor are given in bold.

Table 14.

Rotated Factor Loadings of PSE–Q Items 11 through 20

Item	Factor 1	Factor 2
11. Stated Need for Achievement	.67	
12. Positive Anticipatory Goal State	.89	
13. Positive Affective State	.52	.44
14. Negative Affective State		.49
15. Standard of Excellence 1		.62
16. Standard of Excellence 2-		.57
17. Standard of Excellence 3	.77	
18. Negative Anticipatory Goal State		.81
19. Successful Instrumental Activity	.74	
20. Unsuccessful Instrumental Activity		.59
Eigenvalue	2.82	2.40
% of variance	28.16	23.97

Note. PSE–Q = questionnaire version of the Picture Story Exercise. Items loadings on designated factor are given in bold.

Table 15.*Rotated Factor Loadings of PSE-Q Items 21 through 30*

Item	Factor 1	Factor 2
21. Positive Affective State	.74	
22. Standard of Excellence 3	.82	
23. Successful Instrumental Activity	.84	
24. Stated Need for Achievement	.78	
25. Negative Affective State	.46	.50
26. Unsuccessful Instrumental Activity	.45	.42
27. Negative Anticipatory Goal State		.80
30. Standard of Excellence 2-		.77
Eigenvalue	2.96	1.80
% of variance	37.02	22.50

Note. PSE-Q = questionnaire version of the Picture Story Exercise. Items loadings on designated factor are given in bold; aberrant loadings (i.e., highest loading is on another factor than the designated one) are italicized. Items 28 and 29 with the lowest item-total correlation were deleted from the analysis.

The factor analysis of the three sets of questions ended up in a two-component structure. The questions which load highly on Factor 1 relate to the positive subcategories of the scoring key and involve *presence of the strong explicit achievement motive*:

N Ich möchte das vorhandene Problem lösen und würde mein Bestes dafür geben.

G+ Ich wäre sehr froh, wenn meine guten Leistungen in dieser Situation anerkannt werden.

I+ Ich würde behutsam und konzentriert arbeiten, um das vorhandene Problem zu beheben.

AI3 Es wäre mir wichtig, durch mein Handeln, neue Ideen zu bekommen oder neue Kenntnisse zu erwerben.

Ga+ Ich würde erwarten, dass das Gelernte für mich Sinn ergibt

The questions which load highly on Factor 2 relate to the negatively coded subcategories of the scoring key and involve *absence of the strong explicit achievement motive*:

I- Ich würde mir keine besondere Mühe geben, so viel wie möglich aus dieser Situation zu lernen.

Ga- Es würde mir nicht sehr viel ausmachen, wenn der Auftrag ergebnislos ausgeführt wird.

G- Es wäre mir gleichgültig, wenn ich den Sachverhalt nicht verstehe.

AI2- Ich würde keine einzigartigen Leistungen erbringen, da es um alltägliche Probleme geht.

Only subcategory **AI1** („In dieser Situation möchte ich besser sein als alle anderen“) showed no consistency and loaded on different factors.

Principal component analysis of the whole questionnaire after rotation ended up in the three-factor solution. The decision criteria included two determinants: (1) set the number of expected factors to be three to check how three sets of questions asked to three different picture cues represent three factors, and (2) each first-order factor should be determined by items with greater than 0.30 factor loading on that first-order factor.

Table 16.

Rotated Factor Loadings of PSE-Q Items 1 through 30

Item	Factor 1	Factor 2	Factor 3
Item 1			.45
Item 2			.66

Item 3		.70
Item 4		.64
Item 5		.63
Item 6		.58
Item 7		.55
Item 8		.60
Item 9		.36
Item 10	.38	.49
Item 11		.77
Item 12		.66
Item 13		.66
Item 14		.34
Item 15		.34
Item 16		.56
Item 17		.68
Item 18		.49
Item 19		.81
Item 20		.48
Item 21	.68	
Item 22	.76	
Item 23	.80	
Item 24	.82	
Item 25	.60	
Item 26	.59	
Item 27	.52	

Item 28	.37		
Item 29			
Item 30	.47		
Eigenvalue	4.08	3.88	3.48
% of variance	13.61	12.94	11.58

Note. PSE–Q = questionnaire version of the Picture Story Exercise. Items loadings on designated factor are given in bold.

5.3.2. Relationships between implicit need for achievement and picture cues.

The means and standard deviations for *n* Achievement for the total sample and by picture cue, gender, and Picture Cue \times Gender are provided in Table 17. Picture cue means in Table 17 represent the average score for that cue across all participants, including those who did not produce motive-relevant imagery. Scores for individual picture cues were summed to obtain overall scores. Thus, overall means in Table 17 represent the average overall score across all participants, including those who did not produce motive-relevant imagery in response to any of the cues.

Inspection of the means revealed that all picture cues elicited high scores for *n*Ach. Schultheiss and Brunstein (2001) suggested that cues that elicit motive imagery from approximately 50% (or more) of participants can be seen to have strong stimulus pull for a given motive. In the research presented here, 60% of participants produced achievement imagery in response to Laptop Girl (Picture Cue 1a) and 73% - to Student and Professor (Picture Cue 2a); 78% - to Info Board (Picture Cue 1b) and 70% - to Newspaper Girl (Picture Cue 2b); and 86% - to Laboratory Women (Picture Cue 1c) and 82% - to Boxer (Picture Cue 2c). Thus, Hypothesis 4 was supported.

Table 17.*Means and Standard Deviations of Raw Scores Across n Achievement and Picture Cues*

Picture Cue	n Achievement		Words	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1a. Laptop girl				
Total sample (<i>n</i> = 60)	2.00	2.26	108	51.60
Men only (<i>n</i> = 13)	2.38	2.50	127	56.82
Women only (<i>n</i> = 47)	1.89	2.21	102	49.41
1b. Info board				
Total sample (<i>n</i> = 60)	2.45	1.62	103	44.12
Men only (<i>n</i> = 13)	2.85	1.72	125	48.06
Women only (<i>n</i> = 47)	2.34	1.59	97	41.52
1c. Laboratory women				
Total sample (<i>n</i> = 59)	2.69	1.64	107	52.40
Men only (<i>n</i> = 13)	2.69	1.93	122	54.72
Women only (<i>n</i> = 46)	2.70	1.58	103	51.50
2a. Student & professor				
Total sample (<i>n</i> = 74)	2.43	1.83	100	42.45
Men only (<i>n</i> = 6)	1.67	1.21	93	35.38
Women only (<i>n</i> = 68)	2.50	1.86	101	43.19
2b. Newspaper girl				
Total sample (<i>n</i> = 73)	2.05	1.90	78	35.07
Men only (<i>n</i> = 6)	3.00	1.79	71	12.04
Women only (<i>n</i> = 67)	1.97	1.90	79	36.40
2c. Boxer				
Total sample (<i>n</i> = 73)	2.60	1.61	86	43.36
Men only (<i>n</i> = 6)	2.33	1.63	72	18.46
Women only (<i>n</i> = 67)	2.63	1.62	87	44.79
Overall score / Set 1				
Total sample (<i>n</i> = 59)	7.19	4.66	320	131.62
Men only (<i>n</i> = 13)	7.92	5.48	374	131.02
Women only (<i>n</i> = 46)	6.98	4.45	305	129.11

Overall score / Set 2

Total sample ($n = 73$)	7.05	3.94	264	110.19
Men only ($n = 6$)	7.00	3.35	236	58.28
Women only ($n = 67$)	7.06	4.01	266	113.62

At first, multivariate analysis of variance (MANOVA) was performed, with number of words in each story as the dependent variable. The independent variables were gender (male vs. female), groups (FH vs. LMU students), and sets (Set 1 vs. Set 2). No significant differences were found in the number of words between males and females, or between FH and LMU students. Although, a significant number of words by Set 1 versus Set 2 interaction was found. $F(1, 124) = 12.97, p < .001, \eta^2 = .095$, for Picture Cues 1b versus 2b; and $F(1, 124) = 7.74, p < .01, \eta^2 = .059$, for Picture Cues 1c versus 2c.

As mentioned in the Material part of the current study, n Achievement scores for each picture cue were corrected for story length. Afterwards, a second multivariate analysis of variance (MANOVA) was performed, using the amount of achievement imagery (corrected z scores) in each story as the dependent variable. The independent variables were gender (male vs. female), groups (FH vs. LMU students), and sets (Set 1 vs. Set 2). No significant differences were found in the amount of achievement imagery between males and females, between FH and LMU students, or between Set 1 and Set 2 (see Table 18).

Table 18.

MANOVA of n Achievement z Scores Coded in Three Picture Cues and as General Score

Source	Dependent Variable	$F(1, 124)$	p	η^2
set	n Ach z Score / Picture Cue 1	.13	.72	.001
	n Ach z Score / Picture Cue 2	2.24	.14	.018
	n Ach z Score / Picture Cue 3	.68	.41	.005
	n Ach General Z Score	1.43	.23	.011
group	n Ach z Score / Picture Cue 1	.19	.66	.002

	<i>nAch z Score / Picture Cue 2</i>	.33	.57	.003
	<i>nAch z Score / Picture Cue 3</i>	1.67	.20	.013
	<i>nAch General Z Score</i>	.25	.62	.002
gender	<i>nAch z Score / Picture Cue 1</i>	.29	.59	.002
	<i>nAch z Score / Picture Cue 2</i>	1.00	.32	.008
	<i>nAch z Score / Picture Cue 3</i>	.37	.55	.003
	<i>nAch General Z Score</i>	.01	.94	.000
set * group	<i>nAch z Score / Picture Cue 1</i>	.49	.49	.004
	<i>nAch z Score / Picture Cue 2</i>	1.41	.24	.011
	<i>nAch z Score / Picture Cue 3</i>	.22	.64	.002
	<i>nAch General Z Score</i>	.47	.49	.004
set * gender	<i>nAch z Score / Picture Cue 1</i>	.45	.51	.004
	<i>nAch z Score / Picture Cue 2</i>	.71	.40	.006
	<i>nAch z Score / Picture Cue 3</i>	.00	.98	.000
	<i>nAch General Z Score</i>	.00	.97	.000
group * gender	<i>nAch z Score / Picture Cue 1</i>	.78	.38	.006
	<i>nAch z Score / Picture Cue 2</i>	.21	.65	.002
	<i>nAch z Score / Picture Cue 3</i>	1.67	.20	.013
	<i>nAch General Z Score</i>	.59	.44	.005
set * group *				
gender	<i>nAch z Score / Picture Cue 1</i>	2.06	.15	.016
	<i>nAch z Score / Picture Cue 2</i>	.22	.64	.002
	<i>nAch z Score / Picture Cue 3</i>	2.51	.12	.020
	<i>nAch General Z Score</i>	.03	.87	.000

Finally, additional repeated measures analysis of variance (ANOVA) revealed that participants' achievement imagery changed significantly over picture position, $F(2,262) = 17.15, p < .001, \eta^2 = .116$ with the significant linear trend, $F(1, 131) = 47.78, p < .001, \eta^2 = .267$. The results are consistent with the research on picture position effects (e.g., Pang & Schultheiss, 2005) which indicates that motive imagery increases with the picture position and starts decreasing after the fourth picture cue.

5.3.3. Relationships among measures of implicit and explicit need for achievement.

5.3.3.1. Group differences.

Before all the correlational analyses were carried out, an independent samples *t* test was carried out to check for significant differences between the two groups of participants: FH and LMU students. There was no significant difference found between the participants in terms of their PSE standardized scores, $t(130) = .76, p > .05$, LMI standard values, $t(131) = -2.42, p > .05$, and PSE-Q raw values, $t(125) = -1.03, p > .05$. But the participants differed significantly on the GPA dimension, $U = 930.50, p < .001$. Due to this difference the further procedures which include the GPA variable will be carried out both for the whole sample and the two groups separately.

5.3.3.2. Correlations between PSE and questionnaire-based measures.

Correlations among the variables are reported in Table 21.

Table 19.

Correlations Among Z PSE Scores, Standard LMI-K Scores and PSE-Q Raw Scores

	1	2	3
1. <i>n</i> Ach: PSE	—		
2. <i>v</i> Ach: LMI-K	.16	—	
3. <i>v</i> Ach: PSE-Q	.18*	.40**	—

Note. *n* Ach = implicit need for achievement: PSE = Picture Story Exercise ($N = 132$); *v* Ach = explicit need for achievement: LMI-K = short version of Leistungsmotivationsinventar ($N = 133$), PSE-Q = matched-content measure ($N = 127$).

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

Regarding Hypotheses 1, 2 and 3, it was examined whether the correlation between implicit and explicit need for achievement varied across two indicators of the explicit need for achievement. The correlations indicated that LMI-K and the PSE-Q which measured the same construct of the explicit achievement motive were significantly related, $r = .40^{**}$, $p < .01$. Hypothesis 1 was supported.

LMI-K was unrelated to the implicit measure of need for achievement PSE, $r = .16$, *ns*. This relation is similar to the overall relation between implicit and explicit need for achievement observed in the extant literature (see pp. 31-32 of this manuscript for more details). In contrast, the PSE was significantly related to the matched-content measure of explicit need for achievement, $r = .18^*$, $p < .05$. Thus, Hypotheses 2 and 3 were also supported.

As shown in Table 19, the two measures of explicit need for achievement were positively intercorrelated. To examine whether the two explicit measures converge as indicators of a single latent variable, a confirmatory factor analysis was conducted with full-information maximum likelihood estimation. Four variables were entered into the analysis: (1) LMI-K standard scores, (2) composite of PSE-Q Items 1 through 10, (2) composite of PSE-Q Items 11 through 20, and (3) composite of PSE-Q Items 21 through 30. A one-factor model was found to have good fit to the data: $\chi^2(df = 5; N = 127) = 7.06$, $p = .22$, $\chi^2/df = 1.41$. Comparative Fit Index (CFI) = .97, Tucker-Lewis Index (TLI) = .91, root mean square error of approximation (RMSEA) = .06. The standardized regression weights were as follows: LMI-K $\beta = .95$, $p = .56$, PSE-Q Items 1-10 $\beta = .31$, $p < .001$, PSE-Q Items 11-20 $\beta = .24$, $p < .001$, PSE-Q Items 21-30 $\beta = .23$, $p < .001$. These results indicate that the two measures converge as indicators of the same explicit need for achievement construct, despite different emphases in item content across measures.

Finally, to examine on which dimensions the PSE is significantly related to the matched-content measure of explicit need for achievement PSE-Q, correlations between PSE scoring subcategories and PSE-Q items, structured according to the factor analysis loadings, were obtained. The results are presented in Tables 20, 21, and 22 for picture cues a, b, and c respectively.

Table 20.

Correlations among PSE-Q Items and PSE Subcategories of Picture Cue A

PSE Subcategories	PSE-Q Items			
	Item 4 (N)	Items 5, 9, 10 (G+, Ga+, I+)	Items 4, 5, 6, 9, 10 (Factor 2)	Items 2, 3, 7, 8 (Factor 1)
<i>N</i>	.19**			
<i>G+, Ga+, I+</i>		.03		
<i>G+, Ga+, I+, N, AI 3</i>			.18**	
<i>G-, Ga-, I-</i>				.09

Note. ** $p < .05$.

Table 21.

Correlations among PSE-Q Items and PSE Subcategories of Picture Cue B

PSE Subcategories	PSE-Q Items			
	Item 11 (N)	Items 12,13,19 (G+, Ga+, I+)	Items 11,12,13,17,19 (Factor 1)	Items 14,16,18,20 (Factor 2)
<i>N</i>	.18*			
<i>G+, Ga+, I+</i>		.04		
<i>G+, Ga+, I+, N, AI 3</i>			.09	
<i>G-, Ga-, I-</i>				.05

Note. * $p = .05$.

Table 22.*Correlations among PSE-Q Items and PSE Subcategories of Picture Cue C*

PSE Subcategories	PSE-Q Items			
	Item 24 (N)	Items 21,23,24 (G+, Ga+, I+)	Items 21,22,23,24,29 (Factor 1)	Items 25,26,27,30 (Factor 2)
<i>N</i>	.10			
<i>G+, Ga+, I+</i>		.15*		
<i>G+, Ga+, I+, N, AI 3</i>			.05	
<i>G-, Ga-, I-</i>				.02

Note. * $p = .10$.

Summing up the results, significant correlations were obtained only between some PSE-Q items (or factor loadings) and PSE subcategories which explains the low significant correlation between the general scores of the PSE and the PSE-Q. For example, $r_s = .19^{**}$, $p < .05$ (picture cue a), and $r_s = .18^*$, $p = .05$ (picture cue b) between the PSE subcategory Need for Achievement and PSE-Q Items 4 and 11 representing the same subcategory. PSE-Q Items 4, 5, 6, 9, and 10 representing Factor 2 and indicating the presence of the strong explicit achievement motive correlated $r_s = .18^{**}$, $p < .05$, with the combination of the same subcategories of the PSE (picture cue a). Finally, PSE-Q Items 21, 23, and 24 correlated $r_s = .15^*$, $p = .10$, with the same positive subcategories of the PSE.

5.3.4. Achievement Motives as Predictors of Academic Success

At first, correlations among two explicit measures of the achievement motive, as well as PSE, with GPA was obtained for two groups of students – FH and LMU.

Table 23.

Correlations Among Z PSE Scores, Standard LMI-K Scores, PSE-Q Raw Scores, and GPA

	LMU Group ¹	FH Group ²
1. GPA	—	—
2. <i>v</i> Ach: LMI-K	-.42**	-.31
3. <i>v</i> Ach: PSE-Q	-.14	-.10
4. <i>n</i> Ach: PSE	-.21*	-.06

Note. *v* Ach = explicit need for achievement: LMI-K = short version of

Leistungsmotivationsinventar, PSE-Q = matched-content measure; *n* Ach = implicit need for achievement: PSE = Picture Story Exercise.

* $p < .05$. ** $p < .01$. $n^1 = 90$. $n^2 = 36$.

As a second step, simultaneous regression analyses were conducted to examine the explicit need for achievement measured with two explicit inventories as predictors of academic success variable, GPA. Standard LMI-K scores and raw PSE-Q scores were entered as independent variables.

Explicit need for achievement measured with LMI-K and PSE-Q explained a significant amount of variance in the academic success variable GPA, $F(2, 87) = 8.00$, $p < .01$ in the LMU group, as well as in the FH group, $F(2, 28) = 4.87$, $p < .05$, indicating that participants who viewed themselves as having an achievement orientation tended to get better grades. The analysis of coefficients indicated that only LMI-K scores were individual significant predictors of GPA in both groups ($\beta = -.42$, $p < .001$ for LMU group and $\beta = -.51$, $p < .01$ for FH group).

Finally, regression analysis was conducted to examine the implicit need for achievement measured with PSE as a predictor of academic success variable, GPA. Standardized PSE general score was entered as an independent variable.

Implicit need for achievement measured with PSE explained no significant amount of variance in the academic success variable GPA, $F(1, 87) = 3.22, p > .05$ in the LMU group, as well as in the FH group, $F(1, 34) = .46, p > .05$, indicating that participants' implicit achievement motive cannot serve as a predictor of academic success.

Thus, Hypotheses 5 and 6 were supported. The results of the multiple regressions are summarized in Table 24.

Table 24.

Hierarchical Multiple Regression Analyses Predicting Academic Success (GPA) from LMI-K, PSE-Q and PSE Measures of the Achievement Motive

Predictor	Academic success (GPA)							
	LMU Group				FH Group			
	R^2	B	$SE B$	β	R^2	B	$SE B$	β
Model 1 / v Ach	.16**				.26*			
LMI-K		-.14	.04	-.43***		-.19	.07	-.51**
PSE-Q		.00	.01	.09		.00	.01	.02
Model 2 / n Ach	.04				.01			
PSE		-.03	.02	-.19		-.02	.03	-.12

Note. v Ach = explicit need for achievement: LMI-K = short version of

Leistungsmotivationsinventar, PSE-Q = matched-content measure; n Ach = implicit need for achievement: PSE = Picture Story Exercise. * $p < .05$. ** $p < .01$. *** $p < .001$.

5.4. Discussion

This study yielded three primary sets of findings. First, it was found that implicit *n* Achievement was uncorrelated with the established measure of explicit need for achievement LMI-K but was significantly correlated with a new explicit measure that directly matched the implicit measure in content. The new explicit measure also correlated significantly with LMI-K which proved that the two questionnaires measured the single construct of the explicit achievement motive.

Second, it was found that new picture cues introduced in the current study were suitable for the measurement of the implicit achievement motive and can be used in the implicit achievement motivation research.

Finally, explicit need for achievement measured with LMI-K and the PSE-Q explained a significant amount of variance in the academic success variable GPA, indicating that participants who viewed themselves as having an achievement orientation tended to get better grades, though only LMI-K scores were individual significant predictors of GPA in both groups of participants, FH and LMU students.

Regarding the first set of findings, the fact that the implicit-explicit relationship was nonsignificant ($r = .16$, *ns*) using an established (nonmatched) measure of explicit need for achievement LMI-K is consistent with previous studies. More important, the finding of a significant correlation between the implicit measure PSE and the new matched-content measure PSE-Q ($r = .18^*$, $p < .05$) suggests that the true implicit-explicit relationship was underestimated in the past research. On the other hand, the construct validity of the PSE-Q was confirmed as soon as its correlation with the established measure of the explicit achievement motive LMI-K turned out to be highly significant ($r = .40^{**}$, $p < .001$).

The results of the exploratory and confirmatory factor analyses also added to the construct validity of the PSE-Q. The factor analysis of the three sets of questions asked to three picture cues ended up in a two-component structure. The questions which loaded highly on Factor 1 related to the positive subcategories of the scoring key and involved presence of the strong explicit achievement motive, while the questions which loaded highly on Factor 2 related to the negatively coded subcategories of the scoring key and involved absence of the strong explicit achievement motive.

On the level of individual correlations between scoring subcategories of the PSE and the PSE-Q items several significant correlations were also obtained which which explained the low significant correlation between the general scores of the PSE and the PSE-Q.

The results of the current study can be compared to the results of two known studies (Schultheiss et al., 2009; Thrash et al., 2007) which investigated the new line of thinking and aimed at studying the correlation between different achievement motive measurement techniques (PSE, self-report measures, and the PSE-Q). The PSE-Qs constructed for these studies differed in that Schultheiss et al. (2009) developed a PSE-Q with the items which covered all the content categories of the coding system by Winter (1994) and measured three motives at once, while Thrash et al. (2007) made use of a PSE-Q developed by Schultheiss and Murray (2002), the content of which corresponded directly to the categories of Heckhausen's coding system (1963) and measured the achievement motive alone. It is not surprising that the results of the current study closely resembled the correlations obtained in the study by Thrash et al. (2007) because both studies aimed at measuring the single achievement motive construct. The results are compared in Table 25.

Table 25.

Intercorrelations for Content-Coding (PSE), Traditional Self-Report and Matched-Content (PSE-Q) Measures of Achievement Motivational Needs

Questionnaire	Thrash et al. (2007)			Current Study		
	1	2	3	1	2	3
1. PSE	—			—		
2. Self-report measure(s)	.00 - .02	—		.16	—	
3. Matched-content measure	.17*	.33** - .35***	—	.18*	.40***	—

Note. Yellow – correlation between PSE and self-report measure(s); green – correlation between PSE and matched-content measure; blue – correlation between self-report and matched-content measures.

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

Still it is to note that the implicit-explicit correlation was weak even with the matched-content measure. And it is likely that further methodological refinements would not yield a strong correlation between implicit and explicit motives. One of the limitations of the research by Schultheiss et al. (2009) was that the authors created PSE-Q response items based on Winter's (1994) integrated coding system. Thus, they suggested that „it may therefore be worth exploring whether our findings can be replicated if implicit motives are assessed using the original coding systems for *n* Power, *n* Achievement, and *n* Affiliation ... and a version of the PSE-Q whose items match these systems subcategory by subcategory“ (Schultheiss et al., 2009, p. 79). The current study made use of a PSE-Q which items matched the subcategories of the original coding system by McClelland et al. (1953), and the results are comparable with the ones obtained in a study which made use of a PSE-Q which items matched the subcategories of the scoring key by Heckhausen (1963). Thus, it can be generalized that when

a PSE-Q is developed for the measurement of one single motive, for example, achievement motive, its correlation with the PSE will be positive and significant.

In line with the research by Thrash et al. (2007), the findings of the current study suggest that implicit and explicit needs for achievement are distinct but related constructs.

The second set of findings indicates that the new picture cues chosen for the current study meet the general requirements to the cue characteristics which a researcher should consider in the construction of the PSE. It is to believe that they possess enough cue strength, cue ambiguity, universality, relevance, and extensity. In the research presented here, 60% of participants produced achievement imagery in response to Laptop Girl (Picture Cue 1a); 73%—to Student and Professor (Picture Cue 2a); 78%—to Info Board (Picture Cue 1b), and 70%—to Newspaper Girl (Picture Cue 2b).

Although the implicit measurement of the achievement motive is well established, currently there is no standard battery of cues. Researchers are not flexible in choosing picture cues according to different research settings and particular target audiences. The overview of the most popular picture cues used in the modern research on the implicit achievement motive are presented on pages 78-81 of this manuscript. They are mostly sport-oriented and depict mainly male figures. The participants of the current study were students (some of them – working students) and, thus, the new picture cues were introduced to arouse the achievement motive in academic and work contexts. The new picture cues were also both male– and female–oriented.

The final set of findings explored the predictive validity of different achievement motive measures. Literature review in this manuscript supports the idea that in general it is inappropriate to compare the predictability of PSE and questionnaire measures of the achievement motive. Extensive research of the topic indicates that implicit motives foresay long-term spontaneous behavioral trends over time, such as entrepreneurial or career success

(pp. 43-51). On the other hand, explicit need for achievement can help foresay an immediate and situation-specific behavior, and is also normally highly correlated with the academic performance criteria, such as grades (pp. 51-56).

The current study supported the thesis that implicit and explicit achievement motives are separate personality constructs in terms of the predicted respondent behaviors. Explicit need for achievement measured with LMI-K and the PSE-Q explained a significant amount of variance in the academic success variable GPA, $F(2, 87) = 8.00, p < .01$ in the LMU group, as well as in the FH group, $F(2, 28) = 4.87, p < .05$, indicating that participants who viewed themselves as having an achievement orientation tended to get better grades. The analysis of coefficients indicated that only LMI-K scores were individual significant predictors of GPA.

On the other hand, implicit need for achievement measured with the PSE explained no significant amount of variance in the academic success variable GPA, $F(1, 87) = 3.22, p > .05$ in the LMU group, as well as in the FH group, $F(1, 34) = .46, p > .05$, indicating that participants' implicit achievement motive cannot serve as a predictor of academic success.

5.5. Limitations

The first limitation of the current research is the structure of the PSE-Q. On the PSE-Q, each coding category of the PSE content coding system was represented by only one item, which may not have been sufficient to cover the entire range of thoughts, intentions, and behaviors that the participants might want to reproduce in their answers. Thus, one way to extend this line of research would be to increase the number of PSE-Q items.

Also the items 1, 9, 15, 28, and 29 which produced the lowest corrected item-total correlation and represented the subcategories *AI I* (Items 1, 15, and 28) and *Ga+* (Items 9 and

29) could be reformulated in order to improve the psychometric properties of the questionnaire.

As far as the PSE is concerned, more picture cues could be used to elicit the implicit achievement motive imagery in the participants, though increasing the time of the test administration can negatively influence the motivation of the testees and, thus, the results.

Participants of the current study worked on the PSE following standard instructions for computer administration. The guiding four standard questions asked to the picture cues were given a separate paragraph for the answers according to the new improvements suggested by Blankenship et al. (2005, 2006) and Blankenship and Zoota (1998). Participants were not time-limited for writing the stories. Thus, it would be interesting to see whether the new picture cues and the improved writing instructions would elicit the same amount of imagery using paper versus computer administration.

Finally, the major limitation of the study is the lack of operant behavior predictor which would be interesting to introduce to compare the predictive validities of implicit versus explicit measurement techniques. The sample under consideration consisted of students and it was hard to obtain such an operant behavior predictor as career success.

CHAPTER 6. SUMMARY AND FUTURE DIRECTIONS

Achievement motive is an important personality trait for the prediction of career and academic success, and a lot of attention is lately drawn to its measurement.

The pioneers of the achievement motivation research, McClelland and Atkinson, performed a lot of studies to prove the importance of the implicit achievement motive for the prediction of career performance and success (e.g., Atkinson, 1966a; McClelland, 1985a, 1987; McClelland et al., 1953; McClelland & Boyatzis, 1982; McClelland & Franz, 1992). Positive correlations also exist between the explicit achievement motive construct and academic performance (e.g., Busato et al., 2000; Giesen et al., 1986; Robbins et al., 2004; Trapmann, 2008; Trapmann et al., 2005; 2007, etc.) which was supported by the current study.

The measurement of the achievement motive is relevant for a number of areas: personnel selection, personnel development, university and school counselling, sport psychology (Schuler & Prochaska, 2001). But in spite of the demonstrated importance of the achievement motivation for the performance and success, at work or in studies, the implementation of its measurement tools in the German-speaking area is not impressive.

The longest tradition in the achievement motive measurement belongs to the projective techniques, and the TAT (or the PSE) is the most widely used and researched tool for the measurement of implicit motives (e.g., Brunstein & Heckhausen, 2007; Langan-Fox & Grant, 2006; Lundy, 1988; Pang, 2010b; Schmalt & Sokolowski, 2000; Schultheiss & Brunstein, 2010b). Nevertheless, in practice the most often implemented tools are self-report questionnaires. And there are logical reasons for that.

Both researchers and practioners view the psychometric properties of the PSE with caution in spite of the fact that the latest studies proved that they are altogether acceptable

(Lundy, 1985; Schultheiss & Pang, 2007; Schultheiss et al., 2008, Smith, 1992b). Still the scepticism expressed about the PSE is clear: The technique is complex, sensitive to the situational impacts, and complicated in the scoring which demands serious training. To add to this, there are no standard battery of picture cues for the measurement of different motives, no norms, and no clear interpretation tables.

We could have said—forget about the PSE, leave it to the narrow circle of the passionate researchers. But the dilemma is that if we want to get a full picture of the achievement motive profile of a person we cannot get away with any of the two kinds of measurements (Rheinberg, 2004). PSE for the measurement of the implicit achievement motive and a self-report measure of the explicit achievement motive need to be implemented together. This becomes even more evident when we look at the latest findings on the implicit/explicit motive congruence.

Implicit/explicit motive incongruence is generally considered to be an undesirable condition. Thus, the general line of research on the interaction between two types of motives is based on the hypothesis that the motive discrepancy is associated with impaired well-being, whereas their correspondence should lead to elevated emotional well-being (Brunstein et al., 1995, 1998; Deci & Ryan, 2000; Hofer & Chasiotis, 2003; Kehr, 2004a, 2004b; Sheldon & Elliot, 1999; Sheldon & Kasser, 1995).

Moreover, in recent years, researchers have started searching for moderators of the relationship between implicit and explicit motives. These include the ability to quickly down-regulate negative affect (Baumann et al., 2005; Brunstein, 2001), volitional regulation (Kehr, 2004a, 2004b), self-determination (Thrash & Elliot, 2002), and private body consciousness, self-monitoring, and preference for consistency (Thrash et al., 2007). Going further, the research is carried out to identify the procedures which can help people to reduce the gap

between implicit and explicit motives (Job & Brabdstätter, 2009; Rheinberg, 2002, 2004; Rheinberg & Engeser, 2010; Schultheiss & Brunstein, 1999).

Having all these findings on hand, we cannot ignore the existence of implicit and explicit achievement motives as two distinct but intercorrelated systems. The current study also supported this idea obtaining small but significant correlation between the implicit measure of the achievement motive and a new explicit measure that directly matched the implicit measure in content. We need a test battery which would include both a PSE-based measure of the implicit achievement motive and a self-report measure of the explicit achievement motive, and, thus, enable us to get a full picture of the person's achievement motivation.

One of the ways to solve the problem of the PSE complexity would be a development of a modern grid technique for the measurement of the achievement motive. As a semi-projective technique, this measure aims at profiting from the advantages of the both self-report and projective measures while eliminating their disadvantages. For example, instead of a complicated story analysis with a scoring key, it is possible to simply count the number of the chosen statements which correspond to the particular motive. At the same time, it is assumed that the choice of a particular statement to a particular picture cue is influenced by the unconscious motives of a person.

Taking into consideration the latest findings by Blankenship et al. (2005, 2006) and Blankenship and Zoota (1998) and the results of the current study it would be interesting to construct a grid-technique consisting of four picture cues introduced in this study. Four standard questions asked to each picture cue could offer five answer options elaborated as to elicit strong achievement orientation versus no achievement orientation or presence of other motives (see Appendix D for an example). Answer options are based on the stories written by the testees of the current study.

Implementation of the two measurement techniques together also leads us to the question of how to interpret the results.

Self-report questionnaires for the measurement of the explicit achievement motive normally provide very short and not quite informative interpretation tables. PSE has no standard interpretation tables. Two types of the achievement motive measures exist separately. Implementation of both measurement techniques requires a development of clear feedback profiles which take into consideration different combinations of implicit/explicit scores. The outcome of the current research was creating feedback profiles which are based on the latest findings and aim at exploring combinations of high and low implicit and explicit achievement motives.

The renewed interest of the researchers to the measurement of implicit motives and the distinction between implicit and explicit motives will hopefully promote and simplify the administration of the PSE. Understanding the distinction between what individuals want unconsciously (implicit motives) and what they believe they want or should strive for (explicit motives), the reasons for and consequences of the incongruence between these two levels of personality, and individuals' ability to bring them into alignment is an important issue in psychology (Schultheiss et al., 2009). Thus, it is worth studying these topics which still offer unexplored opportunities for researchers.

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APPENDIX A (NEW PICTURE CUES FOR AROUSAL OF *N* ACHIEVEMENT)

A-1 Picture Cue 1a / Girl with a Laptop

A-2 Picture Cue 1b / Student at an Information Board

A-3 Picture Cue 2a / Student and Professor

A-4 Picture Cue 2b / Girl with a Newspaper

A-1 Picture Cue 1a / Girl with a Laptop



A-2 Picture Cue 1b / Student at an Information Board



A-3 Picture Cue 2a / Student and Professor



A-4 Picture Cue 2b / Girl with a Newspaper



**APPENDIX B (PSE-QUESTIONNAIRE FOR THE MEASUREMENT OF EXPLICIT
ACHIEVEMENT MOTIVE)**

B-1 Instructions (German)

B-2 PSE-Questionnaire (German)

B-3 Instructions (English)

B-4 PSE-Questionnaire (English)

B-1 Instructions (German)

- Auf den folgenden Folien sind wieder 3 Bilder dargestellt.
- Bitte schauen Sie sich jedes Bild für einen kurzen Moment an und versuchen Sie dann, sich vorzustellen, eine der abgebildeten Personen zu sein. Danach sollen Sie die 10 Fragen zum jeden Bild beantworten über was Sie denken, fühlen, wollen oder versuchen zu tun würden, wenn Sie eine der Personen im Bild wären.
- Für jedes Bild werden dieselbe 10 Fragen gestellt.
- Bitte lesen Sie jede Frage genau durch und geben Sie an, wieweit sie auf Sie persönlich zutrifft, wenn Sie eine der abgebildeten Personen wären. Sie können hierbei zwischen den Antwortmöglichkeiten 1 und 5 abstufen. Wenn eine Aussage gar nicht auf Sie persönlich zutrifft, markieren Sie die 1. Trifft eine Aussage hingegen vollständig auf Sie zu, markieren Sie die 5. Zwischen 1 und 5 können Sie beliebig abstufen.

B-2 PSE-Questionnaire (German)**Beantworten Sie die Fragen zum ersten Bild:**

1. In dieser Situation möchte ich besser sein als alle anderen.
2. Es wäre mir gleichgültig, wenn ich den Sachverhalt nicht verstehe.
3. Ich würde mir keine besondere Mühe geben, so viel wie möglich aus dieser Situation zu lernen.
4. Ich möchte das vorhandene Problem lösen und würde mein Bestes dafür geben.
5. Ich wäre sehr froh, wenn meine guten Leistungen in dieser Situation anerkannt werden.
6. Es wäre mir wichtig, durch mein Handeln, neue Ideen zu bekommen oder neue Kenntnisse zu erwerben.
7. Ich würde keine einzigartigen Leistungen erbringen, da es um alltägliche Probleme geht.
8. Es würde mir nicht sehr viel ausmachen, wenn der Auftrag ergebnislos ausgeführt wird.
9. Ich würde erwarten, dass das Gelernte für mich Sinn ergibt.
10. Ich würde behutsam und konzentriert arbeiten, um das vorhandene Problem zu beheben.

Beantworten Sie die Fragen zum zweiten Bild:

11. Ich möchte das vorhandene Problem lösen und würde mein Bestes dafür geben.
12. Ich würde erwarten, dass das Gelernte für mich Sinn ergibt.
13. Ich wäre sehr froh, wenn meine guten Leistungen in dieser Situation anerkannt werden.
14. Es wäre mir gleichgültig, wenn ich den Sachverhalt nicht verstehe.
15. In dieser Situation möchte ich besser sein als alle anderen.
16. Ich würde keine einzigartigen Leistungen erbringen, da es um alltägliche Probleme geht.
17. Es wäre mir wichtig, durch mein Handeln, neue Ideen zu bekommen oder neue Kenntnisse zu erwerben.

18. Es würde mir nicht sehr viel ausmachen, wenn der Auftrag ergebnislos ausgeführt wird.
19. Ich würde behutsam und konzentriert arbeiten, um das vorhandene Problem zu beheben.
20. Ich würde mir keine besondere Mühe geben, so viel wie möglich aus dieser Situation zu lernen.

Beantworten Sie die Fragen zum dritten Bild:

21. Ich wäre sehr froh, wenn meine guten Leistungen in dieser Situation anerkannt werden.
22. Es wäre mir wichtig, durch mein Handeln, neue Ideen zu bekommen oder neue Kenntnisse zu erwerben.
23. Ich würde behutsam und konzentriert arbeiten, um das vorhandene Problem zu beheben.
24. Ich möchte das vorhandene Problem lösen und würde mein Bestes dafür geben.
25. Es wäre mir gleichgültig, wenn ich den Sachverhalt nicht verstehe.
26. Ich würde mir keine besondere Mühe geben, so viel wie möglich aus dieser Situation zu lernen.
27. Es würde mir nicht sehr viel ausmachen, wenn der Auftrag ergebnislos ausgeführt wird.
28. In dieser Situation möchte ich besser sein als alle anderen.
29. Ich würde erwarten, dass das Gelernte für mich Sinn ergibt.
30. Ich würde keine einzigartigen Leistungen erbringen, da es um alltägliche Probleme geht.

B-3 Instructions (English)

- In the next task, you will see 3 pictures.
- Please look at each picture and imagine that you would be one of the people in the situation. After watching each picture, you will answer 10 questions about what you would think, feel, want, or try to do if you were one of the people in the situation.
- You will be asked the same 10 questions for each picture.
- Please read all the questions carefully and specify to what extent the statements would apply to you if you were one of the people in the depicted situation. The items are presented with a 1 to 5 response scale. When a statement does not apply to you at all, choose 1. If a statement fully applies to you, choose 5. You can also optionally choose between 1 and 5.

B-4 PSE-Questionnaire (English)**Answer the questions to the first picture:**

1. In this situation I would like to be better than all the others.
2. I wouldn't care if I did not understand the current issue.
3. I would not try hard to learn as much as possible from this situation.
4. I would like to solve the problem at hand and do my best for that.
5. I would be very glad to get the recognition for my good performance in this situation.
6. It would be important for me to get new ideas or acquire new skills as a result of my actions.
7. I would not bring out outstanding performance because it is a routine problem.
8. It would make no difference for me if the task was carried out without result.
9. I would expect that what I might learn from this situation will lead to something meaningful.
10. I would work with caution and concentration to solve the existing problem.

Answer the questions to the second picture:

11. I would like to solve the problem at hand and do my best for that.
12. I would expect that what I might learn will lead to something meaningful.
13. I would be very glad to get the recognition for my good performance in this situation.
14. I wouldn't care if I did not understand the current issue.
15. In this situation I would like to be better than all the others.
16. I would not bring out outstanding performance because it is a routine problem.
17. It would be important for me to get new ideas or acquire new skills as a result of my actions.
18. It would make no difference for me if the task was carried out without result.
19. I would work with caution and concentration to solve the existing problem.
20. I would not try hard to learn as much as possible from this situation.

Answer the questions to the third picture:

21. I would be very glad to get the recognition for my good performance in this situation.

22. It would be important for me to get new ideas or acquire new skills as a result of my actions.
23. I would work with caution and concentration to solve the existing problem.
24. I would like to solve the problem at hand and do my best for that.
25. I wouldn't care if I did not understand the current issue.
26. I would not try hard to learn as much as possible from this situation.
27. It would make no difference for me if the task was carried out without result.
28. In this situation I would like to be better than all the others.
29. I would expect that what I might learn from this situation will lead to something meaningful.
30. I would not bring out outstanding performance because it is a routine problem.

**APPENDIX C (INTERPRETATION OF COMBINATION OF IMPLICIT
n ACHIEVEMENT AND EXPLICIT *v* ACHIEVEMENT MOTIVE SCORES)**

C-1 High *n* Achievement and High *v* Achievement (German)

C-2 High *n* Achievement and Low *v* Achievement (German)

C-3 Low *n* Achievement and High *v* Achievement (German)

C-4 Low *n* Achievement and Low *v* Achievement (German)

C-5 High *n* Achievement and High *v* Achievement (English)

C-6 High *n* Achievement and Low *v* Achievement (English)

C-7 Low *n* Achievement and High *v* Achievement (English)

C-8 Low *n* Achievement and Low *v* Achievement (English)

C-1 High *n* Achievement and High *v* Achievement (German)

Sie empfinden sich als hoch leistungsmotiviert. Ihr Ziel ist andere Leute zu übertreffen und Sie zeichnen sich aus durch das Streben nach dem Wettbewerb. Aber das Ergebnis Ihrer Leistungen hängt davon ab, wie hoch Ihre implizite Leistungsmotivation ist. Sie ist hoch in Ihrem Fall, und mit größter Wahrscheinlichkeit erledigen Sie alle Aufgaben sehr gut.

Sie haben ein starkes „autonomes“ Leistungsmotiv entwickelt: sie streben vor allem danach, ihre eigenen Handlungskompetenzen zu erweitern, zu sehen, wie sich die eigenen Fähig- und Fertigkeiten erweitern und entwickeln, unabhängig davon, welche Anforderungen von Lehrern, Eltern, Vorgesetzten oder anderen Autoritäten an sie herangetragen werden. Andererseits ist es für Sie auch wichtig, wie die anderen Ihre Entwicklung beurteilen.

Die Anreize, die Sie dazu antreiben können, bestimmte Handlungen auszuführen, sind beide intrinsische und extrinsische. Der intrinsische Anreiz besteht in der Fertigstellung der Arbeit an sich oder den damit zusammenhängenden Ergebnissen. Die zusätzliche Belohnung, die für das Erledigen der Aufgabe ausgehändigt wird gehört zu den extrinsischen Anreizen. Diese Belohnung kann entweder materieller oder immaterieller Art sein. Immaterielle Anreize sind Arbeitsbedingungen, Karrierechancen, Betriebsklima, Auszeichnungen, und materielle Anreize sind Prämien, Erfolgsbeteiligung, Dienstwagen und so weiter. Die Erwartungen und Anforderungen von dem Leiter, Vorgesetzten oder der Gruppe können Sie auch reizen, große Mühen auf sich zu nehmen. Wenn solche Anreize bestehen, kann Ihre hohe intrinsische und extrinsische Leistungsmotivation den Erfolg in verschiedenen Bereichen sichern (besonders, in Unternehmertätigkeiten).

Ihre Neigung, Ihr Denken häufig auf die Zukunft auszurichten, hilft Ihnen dabei. Sie zeichnen sich also ganz allgemein durch ein gutes Maß an selbstregulatorischen Kompetenzen und durch eine erweiterte Zeitperspektive aus.

Schließlich schätzen Sie Aufgaben mittlerer Schwierigkeit, Eigenverantwortlichkeit und Leistungsrückmeldung. Je stärker eine Aufgabe solche Tätigkeitsanreize enthält, desto stärker regt sie das Leistungsmotiv an. Sie finden etwa Gefallen an Aufgaben, bei denen sie Erfolg oder Misserfolg selbst zu verantworten haben und die nicht vom Verhalten anderer Personen oder vom Zufall abhängen.

Hinweis

Die hohe Ausprägung Ihrer beiden intrinsischen und extrinsischen Motive sichert nicht nur den beruflichen Erfolg, sondern ruft ein positives Wohlbefinden hervor. Aufgrund der Übereinstimmung Ihrer Motive sind Sie auch weniger abhängig von der sozialen Umgebung, mehr selbstsicher und handlungsorientiert. Im Allgemeinen entscheiden Sie sich für die Ziele die Ihren impliziten Motiven entsprechen.

C-2 High *n* Achievement and Low *v* Achievement (German)

Sie haben ein starkes „autonomes“ Leistungsmotiv entwickelt: sie streben vor allem danach, ihre eigenen Handlungskompetenzen zu erweitern, zu sehen, wie sich die eigenen Fähig- und Fertigkeiten erweitern und entwickeln, unabhängig davon, welche Anforderungen von Lehrern, Eltern, Vorgesetzten oder anderen Autoritäten an sie herangetragen werden. Sie scheinen nicht auf soziale Aufforderungen anzusprechen. Wenn Leistung etwas ist, das von einer anderen Person eingefordert oder von einer Institution ausdrücklich erwartet wird („Ich erwarte von Dir, dass Du hier eine gute Note bekommst!“), dann schneiden Sie nicht besser ab als Menschen mit einem niedrigen Leistungsmotiv. Solche sozialen Anreize scheinen gute Leistungen bei Ihnen sogar eher zu unterdrücken. Sie streben nicht danach, andere Leute auszustechen.

Die Anreize, die Sie dazu antreiben können, bestimmte Handlungen auszuführen, sind mit dem Prozess der Aufgabenbewältigung verbunden. Das Anfertigen bzw. die Fertigstellung der Arbeit an sich oder die damit zusammenhängenden Ergebnisse werden als befriedigend empfunden und sind bereits ein Anreiz.

Sie schätzen auch Aufgaben mittlerer Schwierigkeit, Eigenverantwortlichkeit und Leistungsrückmeldung. Je stärker eine Aufgabe solche Tätigkeitsanreize enthält, desto stärker regt sie das Leistungsmotiv an. Sie finden etwa Gefallen an Aufgaben, bei denen sie Erfolg oder Misserfolg selbst zu verantworten haben und die nicht vom Verhalten anderer Personen oder vom Zufall abhängen. Zudem bevorzugen sie Aufgaben, bei denen sie möglichst rasch eine Rückmeldung über ihre Leistung erhalten. Geld ist kein Motivator, häufige Rückmeldungen sind viel effektiver für Sie. Und am meisten schätzen Sie die individuellen Rückmeldungen, die ihre eigene aktuelle Leistung mit den bisherigen Ergebnissen vergleichen.

Ihre hohe intrinsische Leistungsmotivation bedeutet, dass Sie erfolgreich in Unternehmertätigkeiten sein sollten. Ihre Neigung, Ihr Denken häufig auf die Zukunft auszurichten, hilft Ihnen dabei. Sie zeichnen sich also ganz allgemein durch ein gutes Maß an selbstregulatorischen Kompetenzen und durch eine erweiterte Zeitperspektive aus.

Achtung

Ihr Wohlbefinden kann beeinträchtigt sein, weil Ihre intrinsische und extrinsische Leistungsmotivation nicht übereinstimmen. Extrinsische Leistungsmotivation ist für die kognitiven Entscheidungen und bewussten Wahlen zuständig und Ihre niedrige Ausprägung kann die Ausführung Ihrer intrinsischen Ziele hindern. Sie können genug Kraft haben, um gute Leistungen zu erzielen (hohe intrinsische Motivation) aber Sie können sich Ihres Leistungsstrebens nicht bewusst sein oder einfach nicht wollen, das anderen zu beweisen (niedrige extrinsische Leistungsmotivation).

Hinweis

Seien Sie sich Ihrem Wunsch herausragend zu sein bewusst und versuchen Sie Ihre Wettbewerbsfähigkeit gegenüber anderen zu steigern. Sie können Ihren eigenen Werten treu bleiben und trotzdem lernen, einen guten Teamplayer zu sein. Betrachten Sie es als eine neue Herausforderung, auf dem Wege zur Perfektion.

C-3 Low *n* Achievement and High *v* Achievement (German)

Sie empfinden sich als hoch leistungsmotiviert. Das bedeutet, dass Sie nicht immer das Bedürfnis haben, gute Leistung zu erzielen, sondern einfach bestrebt sind, als sachverständig und kompetent zu erscheinen, für sich selbst und für die anderen.

Ihr Ziel ist andere Leute zu übertreffen und Sie zeichnen sich aus durch das Streben nach dem Wettbewerb. Aber das Ergebnis Ihrer Leistungen hängt davon ab, wie hoch Ihre implizite Leistungsmotivation ist. Sie ist niedrig in Ihrem Fall, und wie gut Sie Ihre Aufgaben erledigen kommt auf die Umstände an (z.B., die Anwesenheit der Anreize).

Die Anreize, die Sie dazu antreiben können, bestimmte Handlungen gut auszuführen, liegen in einer zusätzlichen Belohnung, die für das Erledigen der Aufgabe ausgehändigt wird und die nicht mit der Aufgabe an sich oder den damit verbundenen Ergebnissen in Verbindung steht. Diese Belohnung kann entweder materieller oder immaterieller Art sein. Immaterielle Anreize sind Arbeitsbedingungen, Karrierechancen, Betriebsklima, Auszeichnungen, und materielle Anreize sind Prämien, Erfolgsbeteiligung, Dienstwagen und so weiter. Es ist für Sie auch wichtig, wie die anderen Ihre Entwicklung beurteilen und die Erwartungen und Anforderungen von dem Leiter, Vorgesetzten oder der Gruppe reizen Sie, große Mühen auf sich zu nehmen. Wenn solche Anreize bestehen, kann Ihre hohe extrinsische Leistungsmotivation den kurzfristigen Erfolg sichern.

Alle hoch Leistungsorientierten schätzen schnelle Leistungsrückmeldung. Da Sie wettbewerbsorientiert sind, zeigen Sie Persistenz, wenn Sie Rückmeldungen erhalten, welche Ihre Leistungen mit denen einer sozialen Vergleichsgruppe vergleichen.

Achtung

Ihr Wohlbefinden kann beeinträchtigt sein, weil Ihre intrinsische und extrinsische Leistungsmotivation nicht übereinstimmen. Sie streben nach der hervorragenden Leistung und möchten besser als andere sein (hohe extrinsische Motivation) aber Ihnen mangelt es an der dafür notwendigen motivierenden Kraft (niedrige intrinsische Motivation). Sie müssen sich immer dazu zwingen und ständig bemühen, eine gute Leistung zu erzielen, was ein Gefühl von Frustration und Unerreichbarkeit der Ziele hervorrufen kann.

Hinweis

Versuchen Sie ein „autonomes“ Leistungsmotiv zu entwickeln. Erweitern Sie ihre eigenen Handlungskompetenzen, unabhängig davon, welche Anforderungen von Lehrern, Eltern, Vorgesetzten oder anderen Autoritäten an sie herangetragen werden. Denken Sie an die Aktivitäten, die Sie gerne andauernd machen können, ohne beurteilt oder gelobt zu werden. Lernen Sie, Ihre Leistungen selbst wert zu schätzen.

C-4 Low *n* Achievement and Low *v* Achievement (German)

Immer und jederzeit Höchstleistungen zu vollbringen ist nicht das vordringliche Anliegen von Personen, die geringe Werte auf diesen Skalen aufweisen. Dem beständigen Ausschöpfen der eigenen Leistungsreserven messen Sie kein positives Gewicht bei. Sie könnten einige Aufgaben im Prinzip besser bewältigen, verfügen aber nicht über den Ehrgeiz, stets höchsten Ansprüchen zu genügen.

Wenn absehbar ist, dass sich ein Ziel nur schwer erreichen lässt, wird nicht weiter daran festgehalten. Das Vollbringen außergewöhnlicher beruflicher Leistungen ist für Sie kein zentraler Anreiz. Sie nehmen ungern große Mühen auf sich, um auf ferne, hochgesteckte Ziele hinzuarbeiten.

Im wirtschaftlichen Kontext werden Sie bisweilen dadurch beschrieben, dass Ihnen der nötige „Drive“ fehle. Ein gering ausgeprägtes Leistungsmotiv ist im Erwachsenenalter vermutlich nur schwer zu verändern, so dass bei Platzierungen darauf zu achten ist, andere relevante Motivatoren zu identifizieren.

Hinweis

Obwohl die niedrige Ausprägung Ihrer intrinsischen und extrinsischen Leistungsmotivation Ihre berufliche Entwicklung hindern kann, die Übereinstimmung Ihrer Motive ruft ein positives Wohlbefinden hervor. Aufgrund dieser Übereinstimmung sind Sie auch weniger abhängig von der sozialen Umgebung, mehr selbstsicher und handlungsorientiert. Im Allgemeinen entscheiden Sie sich für die Ziele die Ihren impliziten Motiven entsprechen.

Zudem sollen Sie sich mit dem Feedback nicht entmutigen lassen weil die Ergebnisse einfach bestätigen dass die Anreize, die Sie dazu antreiben können, bestimmte Handlungen auszuführen, im Bereich des Anschlusses oder der Macht (das Anschlussmotiv oder Machtmotiv) liegen.

C-5 High *n* Achievement and High *v* Achievement (English)

You perceive yourself as highly achievement-oriented. Your challenge is to outperform other people and you possess the desire to compete. You are likely to participate in different competitions. But the outcome of them depends on the strength of your implicit achievement motive, which is high in your case. It can surely help you get a good performance outcome.

You developed an autonomous form of achievement motivation. It means that you are concerned with personal standards of excellence and intensify your efforts if you perceive that you fail to meet your previous accomplishments. You compete with your own norms and prefer to live up to your own internal standards. On the other hand, how people estimate your progress is also important for you.

So the best incentives which can trigger your motivation to choose to perform an activity are both task-oriented and social-evaluative. The reinforcing characteristics of the task can be task contingency, moderate task risk, achievement work content, difficulty, novelty, or complexity of the task. Social-evaluative incentives include rewards, prompts, expectations, demands from outside the task—provided by boss, experimenter, group. So in your job choices it would be beneficial for you to look for competitive coworkers, demanding supervisors, or work surroundings with enough competition pressure, achievement-oriented instructions, and time-assessment. In the presence of such achievement-stimulating incentives you are most likely to achieve long-term career success.

Finally, in your job choices you normally look for activities that are moderately difficult and prefer personal responsibility for performance and tasks that under your direct control. When all these three prerequisites are provided (personal responsibility, direct feedback, liberty to set and attain challenging goals) you are likely to do well in your chosen profession.

Hint

High scores of your both intrinsic and extrinsic achievement motive ensure not only career success but also elevated emotional well-being. Congruence between your intrinsic and extrinsic motives makes you less dependent on your social surrounding, more self-confident, and action-oriented. In general, you consciously choose and pursue the goals which are consistent with your implicit motives.

C-6 High n Achievement and Low v Achievement (English)

You developed an autonomous form of achievement motivation. High n Achievement score means that you are concerned with personal standards of excellence and intensify your efforts if you perceive that you fail to repeat your previous accomplishments. You compete with your own norms and prefer to live up to your own internal standards. Low n Achievement score also makes you indifferent to opinions of other people. You do not strive to outperform others and competition is not appealing to you. On the contrary, you would perform even worse when pressured to do well („I expect that you will get a good grade!“).

So the best incentives which can trigger your motivation to choose a task are task-oriented. The reinforcing characteristics of the task can be task contingency, moderate task risk, achievement work content, difficulty, novelty, or complexity of the task. You might enjoy working on an interesting task, and its successful fulfillment can be an incentive itself. In the presence of such achievement-stimulating tasks you are most likely to achieve long-term career success. High n Achievement makes you future-oriented and you possess long-term goal orientation.

On the other hand, you would not perform better when pressured externally or when outcomes are due to chance. All the high achievers also prefer tasks which allow a quick performance feedback. But you value feedback that is self-referent, which compares your current performance with your own previous results.

Finally, in your job choices you normally look for activities that are moderately difficult and prefer personal responsibility for performance and tasks that under your direct control. When all these three prerequisites are provided (personal responsibility, direct feedback, liberty to set and attain challenging goals) you are likely to do well in your chosen profession.

Attention:

Due to the incongruence of your implicit and explicit need for achievement you might experience impaired well-being. As extrinsic achievement motivation is responsible for cognitive decisions and conscious choices, its low value might hinder the realisation of your intrinsic goals. You might possess the energy to perform good (high implicit motivation), but lack the conscious knowledge about it or desire to show it to others (low explicit motivation).

Tip (what to do):

Be conscious about your desire to excel and try to become more competitive against other people. You can stay an individual with your own values and at the same time learn to be a good team player. View it as one more challenge you need to overcome on your way to perfection.

C-7 Low *n* Achievement and High *v* Achievement (English)

You perceive yourself or would like to be highly achievement-oriented. It means that you do not always have a need to bring out good performance but are just anxious to appear to be competent in one's own eyes and the eyes of the others.

Your challenge is to outperform other people and you possess the desire to compete. You are likely to participate in different competitions. But the outcome of them depends on the strength of your implicit achievement motive. As it is low, how well you will do depends on the circumstances (e.g., presence of the motivating incentives).

You are more likely to adhere to normative standards that are based on social expectancies. So you might want to succeed in professions that are popular in the group to which you belong. What other people think about you and how they estimate your progress is important for you.

So it is social-evaluative incentives which can trigger your motivation and make you perform a task well. They are rewards, prompts, expectations, demands from outside the task—provided by boss, experimenter, group. So in your job choices it would be beneficial for you to look for competitive coworkers, demanding supervisors, or work surroundings with enough competition pressure, achievement-oriented instructions, and time-assessment. In the presence of such incentives, your high explicit need for achievement can help you gain short-term success.

All the high achievers also prefer tasks which allow a quick performance feedback. And as you value competition with others, you need feedback which is norm-referenced, that is, it explains and compares your performance with that of others or ranks your abilities.

Attention:

Due to the incongruence of your implicit and explicit need for achievement you might experience impaired well-being. You strive for excellence (high explicit motivation) but lack the necessary motivating energy (low implicit motivation) to do it automatically, without constant efforts. Sometimes it may lead to feelings of frustration and unattainability of goals.

Tip (what to do):

Try to develop an autonomous form of achievement motivation when the choice of the task and intensity of your efforts depend on your own norms and standards. Think about activities in which you could persevere without being praised or assessed. Learn to be your own judge for your successes or failures.

C-8 Low *n* Achievement and Low *v* Achievement (English)

Low values on the achievement motive dimensions indicate that bringing out good performance does not belong to your everyday priorities. You could be successful at carrying out some tasks but are not ambitious enough to constantly meet the highest standards.

You won't persevere when a goal is hard to achieve. You are not ambitious to overperform at work and do not like long-term goals which require extra efforts.

In terms of your performance you could be described as someone who lacks the certain drive. Taking into account the fact that it is hard to change the strength of the achievement motives with age, it is advisable for you to identify other relevant factors which could enhance the quality of your performance.

Attention

Though low levels of both intrinsic and extrinsic achievement motives may not make you very successful at work, the congruence between them should positively influence your emotional well-being. The congruence also makes you less dependent on the social environment, more self-confident, and action-oriented. In general, you consciously choose and pursue the goals which are consistent with your implicit motives.

To add to this, you should not be discouraged with the feedback because the results just indicate that the incentives which motivate you at most lie outside the achievement motive dimension and belong to other areas (for example, your prevailing motive could be power or affiliation).

**APPENDIX D (EXAMPLE OF A GRID-TECHNIQUE FOR THE MEASUREMENT
OF IMPLICIT ACHIEVEMENT MOTIVE BASED ON THE CURRENT STUDY)**

D-1 Picture Cue *Girl with a Laptop* / Question 1

D-2 Picture Cue *Girl with a Laptop* / Question 2

D-3 Picture Cue *Girl with a Laptop* / Question 3

D-4 Picture Cue *Girl with a Laptop* / Question 4

D-5 Interpretation Key

D-1 Picture Cue *Girl with a Laptop* / Question 1

1) Was passiert gerade?

Wer sind die abgebildeten Leute?

- 1a) Eine Frau sitzt in einem Cafe vor dem Laptop und trinkt entspannt einen Kaffee.
- 1b) Zwei Studenten sitzen in einem Cafe und gehen Ihre gemeinsam erarbeitete Präsentation durch.
- 1c) Zwei Kommilitonen bearbeiten eine Aufgabe und eine/einer von beiden erklärt dem/der anderen, wie das Ganze funktionieren soll.
- 1d) Eine junge Business-Frau bearbeitet eine Präsentation und/oder wartet auf einen Geschäftspartner.
- 1e) Eine erfahrene Journalistin arbeitet mit Ihrem Partner an einer schwierigen Aufgabe.



D-2 Picture Cue *Girl with a Laptop* / Question 2**2) Was passierte vorher?**

2a) Sie hat/haben beschlossen in ein Cafe zu gehen, in der Hoffnung sich dort besser konzentrieren zu können oder andere Ideen zu finden.

2b) Sie wollte/wollten die Arbeit schnell erledigen und eine Pause genießen aber ihr Vorgesetzter hat angerufen und sie deshalb weiter arbeiten muss/müssen.

2c) Sie hat/haben ihre Emails überprüft oder im Internet einige Seiten recherchiert.

2d) Sie hat/haben sich gut vorbereitet und viele Informationen zusammengetragen.

2e) Sie hat/haben sich in aller Ruhe den Kaffee hergerichtet, und sich die neuesten Geschichten erzählt oder über private Dinge gesprochen.



D-3 Picture Cue *Girl with a Laptop* / Question 3**3) Was denken und fühlen die Leute?
Welche Absichten verfolgen sie?**

3a) Sie tauschen Meinungen aus und versuchen das Geschehene zur gemeinsamen Zufriedenheit zu verarbeiten.

3b) Sie wirkt/wirken nervös und aufgeregt, weil sie mit dem Ergebnis nicht zufrieden ist/sind.

3c) Sie sieht/sehen nachdenklich und höchstkonzentriert aus und hofft/hoffen einen Lichtblick zu finden, um das aufgetretene Problem am sinnvollsten zu lösen.

3d) Sie fühlt/fühlen sich ehrgeizig und möchte/möchten die anderen Leute mit dem was sie macht/machen beeindrucken.

3e) Sie liest/lesen etwas auf dem Bildschirm, fühlt/fühlen sich wohl und eilt/eilen sich nicht.



D-4 Picture Cue *Girl with a Laptop* / Question 4**4) Was wird als nächstes passieren?**

- 4a) Sie wird/werden andere Leute von ihren Ideen überzeugen und sich sehr stolz fühlen.
- 4b) Sie wird/werden die Arbeit zu einem guten, schnellen, effizienten Abschluss bringen.
- 4c) Sie wird/werden den Kaffee austrinken, das Essen verspeisen, und das Cafe verlassen.
- 4d) Man redet vielleicht miteinander und es werden neue Freundschaften entstehen.
- 4e) Sie wird/werden die Aufgabe wegen der fehlenden Daten oder des Kenntnismangels nicht erledigen und sich sehr deprimiert fühlen.



D-5 Interpretation Key

Type of Motive	Question 1	Question 2	Question 3	Question 4
<i>n</i> Achievement	e, d	a, d	b, c	b, e
<i>n</i> Power	c	b	d	a
<i>n</i> Affiliation	b	e	a	d
No motive	a	c	e	c

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- | | |
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| Oktober 2007 -
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Abschluss: Promotion (Magna cum laude)
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Promotionsarbeit: "Messung des impliziten und expliziten Leistungsmotivs: Neue Perspektiven" |
| Oktober 2003 -
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Schwerpunkt: Pädagogische und differentielle Psychologie
Masterarbeit: "Persönlichkeitseigenschaften und die Arbeitszufriedenheit als die Voraussetzung für den Berufserfolg". |
| September 1997 -
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Abschluss: Bachelor of Arts (B. A.), Note: 1, 3
Schwerpunkt: Linguistik und interkulturelle Kommunikation
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Berufliche Erfahrung

- | | |
|-----------------------------------|---|
| Oktober 2005 -
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<u>Beruf:</u> Lehrbeauftragte |
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Sprachkenntnisse

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