

Sources of Intuitive and Deliberative Decisions: The Role of Implicit and Explicit Motives

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Sources of Intuitive and Deliberative Decisions:

The Role of Implicit and Explicit Motives

Abstract:

The question of underlying (motivational) sources of decisions has largely been neglected within both psychology and economics. This dissertation aims to understand the ‘what’ of decision making by connecting two fields of research that have up to now been studied independently and in isolation: Intuitive/Deliberative Decisions and Dual-Motive Theory. The dual-motive theory proposes two kinds of underlying motivational sources: Implicit and Explicit Motives. While implicit motives are non-declarative, affective-based and partially an innate-system, explicit motives are declarative, cognitively elaborate and a socially-influenced system. This dissertation proposes that intuitive decisions are driven by implicit motives while deliberative decisions are driven by explicit motives.

These two hypotheses were tested empirically across four experiments. Throughout the experiments, intuitive and deliberative decision modes were induced via instructions. Depending on whether decisions were made intuitively or deliberately we expect either the implicit or the explicit motives to predict decisions. Decisions were in the form of scenarios with options corresponding to Achievement, Affiliation and Power motives.

Contrary to our hypothesis, we did not find differences depending on the decision mode. Regardless of whether decisions were made intuitively or deliberately, explicit motives predicted decisions and implicit motives did not predict decisions. The fact that implicit motives did not predict decisions could mean that (a) it is not implicit motives that drive intuitive decisions or (b) it was not intuition which was assessed.

Further examinations on implicit motive and decision making literature revealed that (a) while the influence of implicit motives has been shown in a variety of cognitive and behavioural indicators, the exact processes of how motives affect behaviors have not been properly addressed and (b) while the basic distinction between intuitive and deliberative may be clear (intuitive

decisions are spontaneous and impulsive while deliberative decisions are explicit and conscious), it remains unclear when exactly each mode of decision making becomes activated. When activated and in conflict, current state of knowledge is insufficient to answer which conditions and variables determine which processes will translate into behavior. And finally, it remains inconclusive whether the conditions and variables influencing decision mode could be categorized into meaningful superordinate category such as the implicit/explicit motives.

Keywords: Intuition, Deliberation, Implicit Motive, Explicit Motive, Decision Making, Motivation, Achievement, Affiliation, Power, Choices, Evaluations.

Ursachen von unbewussten und bewussten Entscheidungen: Die Rolle von impliziten und expliziten Motiven

Zusammenfassung:

Die Frage bezüglich der zugrunde liegenden (motivierenden) Ursachen von Entscheidungen wurde sowohl in der Psychologie als auch Ökonomie größtenteils vernachlässigt. Aus diesem Grund befasst sich diese Dissertationsschrift mit der Ursache der Entscheidungsfindung auf zwei Forschungsgebieten, welche bis zum gegenwärtigen Stand unabhängig und isoliert voneinander betrachtet worden sind. Bei den Forschungsgebieten handelt es sich um unbewusste/bewusste Entscheidungsfindung und duale Motivforschung. Die Theorie der dualen Motivforschung betrachtet zwei grundlegenden Arten von Motivationsquellen: implizite und explizite Motive. Implizite Motive sind durch eine nichtdeklarative Charakteristik gekennzeichnet, welche auf einem affektiven und teilweise angeborenen System basiert. Explizite Motive sind hingegen durch eine deklarative Charakteristik gekennzeichnet, welche auf einem kognitiv erarbeiteten und sozial beeinflussten System basiert. In der Dissertationsschrift werden zwei Entscheidungsmodelle betrachtet: Unbewusste Entscheidungen werden durch implizite Motive angetrieben und bewusste Entscheidungen werden durch explizite Motive angetrieben.

Beide Entscheidungsmodelle werden anhand von vier empirischen Untersuchungen verifiziert. In den Experimenten wurden sowohl unbewusste als auch bewusste Entscheidungen anhand von Anleitungen hervorgerufen. In Abhängigkeit von der jeweils unbewusst oder bewusst getroffenen Entscheidung wurden entweder implizite oder explizite Motive zur Entscheidungsfindung prognostiziert. Die Entscheidungen wurden anhand von Szenarien getroffen, welche den Themen Erfolg, Zugehörigkeit und Macht zuzuordnen waren.

Anhand der Experimente konnten keine Unterschiede basierend auf den beiden Entscheidungsmodellen gefunden werden. Unabhängig von der jeweilig unbewusst oder bewusst getroffenen Entscheidung ließen sich explizite Motive vorhersagen und implizite Motive nicht vorhersagen. Die Ursache für die nicht Vorhersagbarkeit der impliziten Motive kann darauf

schließen, dass (a) unbewusste Entscheidungen nicht durch implizite Motive angetrieben werden oder (b) dass die Intuition nicht bewertet wurde.

Anderweitige Untersuchungen haben in diesen Zusammenhang aufgezeigt, dass (a) trotz einer Beeinflussung der unbewussten Motive (anhand von Bewusstseins- und Verhaltensindikatoren) die exakten Prozesse zur Beeinflussung des Verhaltens nicht genau angesprochen worden sind. Weiterhin (b) kann zwar die grundlegende Unterscheidung zwischen unbewussten und bewussten Entscheidungen deutlich sein (unbewusste Entscheidungen sind spontan und impulsiv während bewusste Entscheidungen eindeutig und sorgfältig sind), allerdings bleibt es undeutlich wann genau welches Modell der Entscheidungsfindung aktiviert wird. Bei einer in Konflikt zueinander stehenden Aktivierung ist der gegenwärtige Wissensstand nicht ausreichend, um eine eindeutige Aussage über die Konditionen und Variablen zur Vorhersage des Verhaltens abzuleiten. Weiterhin kann nicht eindeutig bewiesen werden, ob die Bedingungen und Variablen der Entscheidungsmethodik in einer übergeordneten bedeutsamen Kategorie (wie implizite/explicite Motive) eingeordnet werden können.

Schlagwörter: Intuition, Sorgfalt, implizite Motive, explizite Motive, Entscheidungsfindung, Motivation, Erfolg, Zugehörigkeit, Macht, Entscheidungen, Bewertungen.

Chapter 1 Theoretical Introduction

This research aims at understanding the ‘what’ of decision making, a topic that has been notoriously neglected in economics and psychology. In economics, preferences have often been regarded as something completely arbitrary: Preferences are not explained or derived from basic motives, instead they are “revealed in the decisions that people make” (revealed preferences; Samuelson, 1947, 1948). The idea of revealed preference has permeated almost all economic theories, ranging from the demand and supply curve, the marginal rate of substitution and the rational choice theory. However, “with reference to their subjective nature, it is left unexplained ... what it is that people have preferences for” (Witt, 2006).

Secondly, the psychology of decision making has also neglected the ‘what’ dimension, and has focused only on the processes of information integration (e.g., Betsch & Glöckner, 2010) and optimal decision making (solving problems with a unique computational solution; e.g. Dijksterhuis & Nordgren, 2006), and at best, has addressed conflicts between short term and long term incentives (time-dependent preference reversals, time discounting; e.g. Frederick et al., 2002). Thus, both within psychology and economics, the question of underlying (motivational) sources of decisions has largely been neglected.

What do human motivations consist of? Apart from basic needs such as eating and resting, McClelland (1987) introduced three underlying social/psychological motives, namely achievement, affiliation and power. The achievement motive refers to ‘the desire to accomplish something difficult, to excel one’s self, to overcome obstacles and to attain a high standard of performance (Murray, 1938). The affiliation motive refers to ‘the concern of establishing, maintaining, or restoring a positive emotional relationship with another person or group’ (Heynes et al, 1958, in Weinberger, Cotler & Fishman, 2010). The power motive refers to ‘the desire to influence, control, and impress others and to derive pleasure from receiving acclaim or recognition for these power-motivated behaviors’ (Fodor, 2010).

Even though all three motives are present in all individuals, motivation research has found different patterns of behaviors depending on whether individuals score high or low on these motives. Achievement-motivated individuals consistently choose to undertake tasks of moderate difficulty, as opposed to tasks that are too easy or too difficult (Atkinson, 1957). They exhibit persistence in a task after failure (McClelland et al., 1989) and their performances are either uncorrelated or inversely correlated with the presence and degree of extrinsic incentive (French, 1955; McKeachie, 1961). Affiliative-motivated individuals on the other hand, are concerned with maintaining good relationships rather than reaching individual success (French, 1958). They spend as much time as possible engaging in social interactions (McClelland, 1985) and while they perform poorly in competitive tasks, they excel in tasks requiring team work (Karabenick & Miller, 1977; Moulton et al., 1958). Affiliative-motivated individuals more rapidly perceived visual cues related to human faces (Atkinson & Walker, 1956) and have a higher progesterone level after seeing an affiliative scene (Schultheiss, Wirth, & Stanton, 2004). Lastly, power motivated individuals are preoccupied with seeking and obtaining positions that will provide them with opportunities to exercise power. They seek close friends that are lower in recognition and status, as well as preferring unassertive, dependent wives (Winter, 1973). Politicians who are high in power motive continue their election campaigns even when winning is not possible indicating that they enjoyed the act of campaigning in and of itself (Winter, 1982). In a competitive contest, power-motivated individuals exhibit higher level of testosterone in events of success or anticipated success (Schultheiss, Campbell & McClelland, 1999).

After decades of research, McClelland and colleagues in a seminal paper of 1989 summarized their research within the framework of dual-motive theory. Despite the pervasive influence of dominant motives on behaviors, individuals' knowledge of their own motives may differ from their actual manifested motives. Motives as measured through projective methods (e.g. Thematic Apperception Test) predict long term trends of behavior. Achievement motive predicts 10 year-long entrepreneurial activity in the United States (McClelland, 1965) and in India (McClelland, 1987b), power motive predicts managerial success in major U.S. companies over 16 years (McClelland & Boyatzis, 1982) and affiliation motive predicts marital happiness and overall psychosocial adjustment over 17 years (McAdams & Vaillant, 1982). On the other hand, knowledge of motives, as measured through self-reported questionnaires, predicts immediate

incentive-sensitive behaviors such as intensity and performance shortly after announcement or reminder of extrinsic rewards (e.g. money). These differential predictions as well as consistent finding that motives measured in these two manners are uncorrelated (McClelland et al., 1989) led to the formation of two kinds of motives. Those measured projectively (Implicit Motives) are conceptualized as non-declarative, affective-based and partially-innate system, while those measured reflectively (via questionnaires) are conceptualized as declarative, cognitively elaborate and socially-influenced system (Explicit Motive).

A similar duality is found within the decision making research. Decisions can be made either intuitively or deliberately. Intuitive decisions come with ease, endow the decision maker with a conviction and the processes behind the decisions are elusive even to the decider. Deliberative decisions on the other hand, require laborious process in which the decision maker deliberately compares choices by weighing the pro and the contra of each option. Through this process, the decision maker is able to articulate reasons for why he comes to a decision. Intuitive decisions are commonly associated with emotion and feeling while deliberative decisions are commonly associated with rationality and cognition (Evans & Stanovich, 2013). The exact processes behind intuitive and deliberative decisions are an on-going debate. They have been identified as different information processing systems (Kahneman, 2011), evolved vs. learned mechanism (Gigerenzer & Selten, 2002), conscious vs. unconscious thinking (Dijksterhuis & Nordgren, 2006) or as a part of the reflective or the impulsive system (Strack & Deutsch, 2004).

Despite parallel characteristics, research connecting intuitive/deliberative decisions and implicit/explicit motives is rare. This dissertation aims to fill the gap, addressing the ‘what’ in decisions by connecting the two fields of research that have up to now been studied independently and in isolation. This dissertation will introduce the basic findings of the literature and empirically test the idea that deliberative decisions are driven by explicit motives, whereas intuitive decisions are driven by implicit motives.

1.1 Manipulations, Characteristics, Outcomes and Explanations of Intuitive/Deliberative Decisions

In this segment, the manners in which intuitive/deliberative mode have been induced in experimental settings will be described. Secondly, criteria or characteristics of intuitive and deliberative decisions will be defined. Thirdly, outcomes or consequences of these choices will be briefly discussed. Fourthly, different accounts that explain the differences between intuitive/deliberative decisions will be presented. In closing, relevant aspects of decision mode for this dissertation will be mentioned.

1.1.1 Manipulations of Intuitive/Deliberative Mode

This segment will introduce several ways in which intuitive/deliberative mode have been induced or determined in experimental settings.

Firstly, intuitive/deliberative mode has been induced via *direct instruction* (Wilson & Schooler, 1991; Halberstadt & Levine, 1999). In inducing via direct instruction, it is assumed that participants are able to select themselves into deciding via different decision modes. Intuitive manipulations instruct participants to make their decisions spontaneously and without second thought. Decisions should be made based on first impression and gut feelings. Additionally, participants were asked to make their decisions as fast as possible. On the other hand, deliberative manipulations instruct participants to make their decisions deliberately. They were requested to weigh the pros and cons of different options, to carefully consider their decisions and to explicitly state the reasons for deciding for one option and against another option. Additionally, they were given a considerable amount of time in which they could deliberate their decisions.

Secondly, the intuitive condition was induced by reducing *cognitive resources* available to perform deliberative processes. This manipulation follows from the assumed characteristic of deliberation, namely that it needs cognitive resources to function. Cognitive resources reduction

is implemented using time pressure (Rand et al., 2012; Tinghög et al., 2013) and/or cognitive load. In the case of time pressure, participants are given a small time window in which they should decide. This is usually emphasized by presenting participants a count down of time left for decisions. Cognitive loads are either achieved by giving participants a large amount of information (Glöckner & Betsch, 2008) or by occupying their working memory (e.g., making decisions while paying attention to a second task; Gilbert et al., 1993; Greene et al., 2008). Deliberative condition is thus induced by providing enough resources and time to perform the specific tasks.

Thirdly, whether participants have decided intuitively or deliberately was *categorized post-hoc* by asking them how they have decided (similar to a manipulation check) or by administering the Cognitive Reflection Task (Frederick, 2005). This method of categorization is frequently used to examine the effect of decision modes on other variables as opposed to understanding the processes behind the decisions (Greene, 2008 on moral decisions; Fenton-O’Creevy et al., 2011 on financial trading).

Lastly, intuitive/deliberative modes have been induced via *priming* which should shift the likelihood of participants in deciding intuitively or deliberately. To illustrate, Butler, Guiso and Jappelli (2013) asked participants to briefly describe (ten) situations in which they have relied on their intuition (or deliberation) to make a decision and that doing it this way turned out to be the correct thing to do.

1.1.2 Characteristics of Intuitive/Deliberative Decisions

Decisions made intuitively have been characterized as being driven by feelings and emotions (Epstein, 2008), as being processed fast and automatically (Kahneman, 2011), as being non-verbal in nature and as being resistant to change (Dane & Pratt, 2009). It has been proposed that intuitive decision making is capable of processing a large amount of information while consuming little or no cognitive resources through the use of parallel and holistic processing (Dijksterhuis & Nordgren, 2006; Betsch & Glöckner, 2010).

Decisions made deliberately, on the other hand, are driven by conscious effort of making comparisons and drawing logical inferences, which is why they are laborious and slow, but are reasoned and precise (Kahneman, 2011). Deliberative decisions require cognitive resources and thus they are compromised when resources are unavailable, such as under time pressure or cognitive load conditions (see, e.g., Chaiken & Trope, 1999; Smith & DeCoster, 2000; Strack & Deutsch, 2004). Deliberative processing focuses on only a small amount of information, works in a serial manner and the processes in which one comes to a deliberate decision are often transparent. This transparency enables objective inspections and thus provides good estimates of facts and external factors (Wilson & Schooler, 1991). Table 1 summarizes the characteristics of intuitive and deliberative decisions (taken from Evans & Stanovich, 2013).

Table 1 Clusters of Attributes Frequently Associated With Dual-Process and Dual-System Theories of Higher Cognition

Type 1 process (intuitive)	Type 2 process (reflective)
Defining features	
<i>Does not require working memory</i>	<i>Requires working memory</i>
<i>Autonomous</i>	<i>Cognitive decoupling; mental simulation</i>
Typical correlates	
Fast	Slow
High capacity	Capacity limited
Parallel	Serial
Nonconscious	Conscious
Biased responses	Normative responses
Contextualized	Abstract
Automatic	Controlled
Associative	Rule-based
Experience-based decision making	Consequential decision making
Independent of cognitive ability	Correlated with cognitive ability
System 1 (old mind)	System 2 (new mind)
Evolved early	Evolved late
Similar to animal cognition	Distinctively human
Implicit knowledge	Explicit knowledge
Basic emotions	Complex emotions

Taken from Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition advancing the debate. *Perspectives on Psychological Science*, 8(3), 223-241.

1.1.3 Outcomes of Intuitive/Deliberative decisions

With regards to outcomes, research on intuitive/deliberative decisions has sometimes shown that intuitive decisions are better than deliberative decisions (Wilson & Schooler, 1991). They are better because they somehow conform to the ‘true attitudes’ that individuals have (Wilson, Lindsey & Schooler, 2000). Wilson and Schooler let participants decide in either modes a variety of strawberry jams and a variety of posters. In the strawberry jams experiment, they found that intuitive compared to deliberative decisions corresponded better to experts’ opinions. In the posters experiment, participants’ decisions were evaluated in light of their own future preference: Participants who decided intuitively like their choice more a couple of weeks later as compared to those who decided deliberately. Halberstadt and Levin (1999) also found that future predictions of experts were more accurate when made intuitively as compared to deliberately, by asking basketball experts to predict the upcoming game results in either modes.

In a similar vein, Dijksterhuis & Nordgren (2006) conducted a series of experiments documenting that distracting participants before completing decision tasks led to more accurate decisions. In this case, accurate decisions referred to selecting option that has a higher total number of positive relative to negative characteristics (e.g. car A vs. car B, roommate A vs. roommate B). Betsch & Glöckner (2010) have also shown that with online distractions (attention-grabbing advertisements that are run simultaneously with the target information), participants in the intuitive compared to the deliberative conditions were more accurate in integrating information and selecting better options. Better options (financial stocks) referred to the ones with a higher total amount of profit.

In contrast to these positive outlooks, intuitive decisions have also been found to lead to short-sighted decisions (Kahneman, 2011) or that impulsive behaviours serve only short and not long-term goals (Nederkoorn et al., 2007). Asking participants to write a random high or low number before an estimation (e.g. digits from their social security number) led to a corresponding over or under-estimation of products’ prices and other factual information (e.g. population of different cities). This phenomena has been termed the anchoring effect (Tversky & Kahneman, 1974). Similarly, changing irrelevant aspect of a problem such as whether it was presented in terms of

losses or gains significantly changed the resulting behaviors (Tversky & Kahneman, 1979). Even experts are prone to such biases. Medical doctors dealing daily with prevalence statistics were grossly mistaken when presented with probabilities as opposed to frequency information (Hoffrage & Gigerenzer, 1998).

One might argue that these biases apply more broadly to thinking in general as opposed to only intuitive decisions. Indeed these biases are robust, meaning that even in deliberation it is hard to avoid the pitfall of the anchoring effect or the emotional burden of loss versus gain. As a result, participants might believe they are deliberating while their thinking is still being led by the corresponding biases. However, an explicit warning of these pitfalls as well as a prolonged deliberation allow for manual corrections of these decisions. Thus, even though these biases might be ‘natural’ to thinking, they serve to illustrate that intuitive impulses could lead us astray.

Absent from all these studies is the influence of intuitive impulses with regards to self. When the goodness of a decision rests not on factual accuracy but on congruency with own preference and attitudes, will the intuitive mode be of help or of hindrance?

1.1.4 Explanations of intuitive/deliberative decisions

Explanation of the differences in intuitive and deliberative decisions came in many forms. While some believe that intuitive and deliberative decisions stemmed from two distinct systems, others simply utilize the distinction without making any claim on the exact nature of the systems (e.g. the two modes can come from a single system or from combinations of different systems). Many articles have been devoted to review the dual (distinct) systems variety (see Evans, 2003, 2008, 2011; Smith & DeCoster, 2000; Evans & Stanovich, 2013). In this segment we will briefly review different theories accounting for intuitive and deliberative decisions.

Kahneman (2011) adheres to the view that there are two parallel information processing systems in human: System 1, the default intuitive system managing day-to-day activities and System 2, the deliberative and rational system allowing for an informed, reasoned decision. Gigerenzer (2007) adheres to a similar but modified view that System 1 consists of smart evolved

mechanisms that are informed and reasoned given the appropriate circumstances. Dijksterhuis & Nordgren (2006) and Glöckner and Betsch (2008) focus on the characteristics of intuitive and deliberative decisions without making claims on whether the resulting patterns came from one or more systems. Strack and Deutsch (2004) focuses instead on the interaction between an impulsive (intuitive) system and a reflective (deliberative) system. With regards to decision making, Strack and Deutsch hold the view that intuitive system plays passive role by providing content for the reflective system, which in turn deliberates and controls the decision process. Lastly, Wilson, Lindsey and Schooler (2000) argued that intuitive decisions reflect a deeper, more essential attitude while deliberative decisions reflect a temporary attitude constructed from salient factors of the ongoing context.

All these theories provided bases in which similarities were drawn between intuitive decisions and implicit motives as well as between deliberative decisions and explicit motives. Throughout the experiments, instructions will be used as main experimental manipulation (Wilson & Schooler, 1991), scenario-based decisions will be used as decision tasks (Dijksterhuis & Nordgren, 2006) and Kahneman/Tversky and Strack/Deutsch models will be discussed in light of the experimental results.

1.2 Implicit and Explicit Motives as Sources of Intuitive and Deliberative Decisions

Dual-motive theory proposed that there are two types of motivations, implicit and explicit motives. Implicit motives are stable, biologically driven affective preferences (McClelland et al., 1989). Satisfaction of implicit motives provides pleasure, whereas failing to satisfy implicit motives compromises well-being (Brunstein, Schultheiss & Grässman, 1998; Brunstein & Maier, 2005). Implicit motives developed during infancy, before children acquired full language proficiency. They have been shown to influence operant behavior and they have been shown to predict long-term developmental outcomes. Explicit motives on the other hand, comprise of knowledge and beliefs about one's own motives (McClelland et al., 1989). Explicit motives developed through cognitive processes and were shaped by social norms, by tangible rewards and by the maintenance of enduring beliefs that individuals hold, such as their self-concepts and

internalized social expectancies (see, e.g., McClelland et al., 1989; Schultheiss & Brunstein, 2010). They are responsive to external incentives and they are better predictors of short-term, situation specific responses (respondent behavior; Langens, 1997; Brunstein, 2008).

Importantly, research has shown repeatedly that implicit and explicit motives are independent and uncorrelated (Schultheiss & Brunstein, 2001; Spangler, 1992). The fact that they are uncorrelated means that it is possible to derive different behavioral predictions from implicit and explicit motives, which is a necessary condition for our hypotheses.

To summarize, the dual motive theory proposed that there are two distinct but parallel motive systems: The Implicit and Explicit Motives. They have different developmental origins, are found to be independent or uncorrelated and they predict different classes of behaviors. Implicit motives predict spontaneous behavior while explicit motives predict respondent behaviors, those initiated by external demands and expectation of consequences (McClelland et al., 1989).

We will now look at the similarities in 1) characteristics and 2) outcomes between the intuitive mode and the implicit motives as well as between the deliberative mode and the explicit motives.

Intuitive mode and implicit motives share similar characteristics. Both are concerned with affective experiences and operate without awareness in influencing decisions and behavior. Both are not easily verbally expressed. The reasons behind intuitive decisions are often unknown to the decider and similarly, knowledge of one's own implicit motives is not easily accessible. Intuitive processes are fast and work holistically. Holistic process and efficient processing are in turn highly suitable to mediate the effect of implicit motives on behavior. On the contrary, deliberative mode and explicit motives are concerned with maintaining consistency, are conscious and are more easily expressed. The processes involved in deliberative mode and explicit motives are more explicit and transparent in comparison to the processes involved in intuitive mode and implicit motive (Evan & Stanovich, 2013). Deliberative mode and explicit motives rely heavily on cognitive processes and are dependent on the availability of cognitive resources (Epstein, 2008; Schultheiss & Brunstein, 2010). Explicit motives often provide goals and goal states that individuals strive to attain. The deliberative mode is likely to mediate effects

of explicit motives on behavior because it is capable of drawing inferences and making comparisons of current and future states.

Regarding outcomes, motivation research has shown that pursuing goals congruent with one's own implicit motives lead to better adaptation, higher life satisfaction and higher efficiency of goal pursuit (Brunstein & Schultheiss, 1998). On the contrary, pursuing goals that reflect explicit (but not implicit) motives reduce well-being and compromise true, long-lasting satisfaction (Baumann, Kaschel & Kuhl, 2005). Similarly, according to Wilson & Schooler's dual-attitude theory, intuitive decisions reflect 'true attitudes' while deliberative decisions reflect the salience of current context which might be independent from actual wants and needs. Through analogy, it seems plausible that intuitive decisions draw on implicit motives, whereas deliberative decisions draw on explicit motives.

1.3 Hypotheses

Hypotheses put forward in this dissertation are:

- 1) Decisions made in the intuitive mode draw their content from the implicit motives and
- 2) Decisions made in the deliberative mode draw their content from the explicit motives.

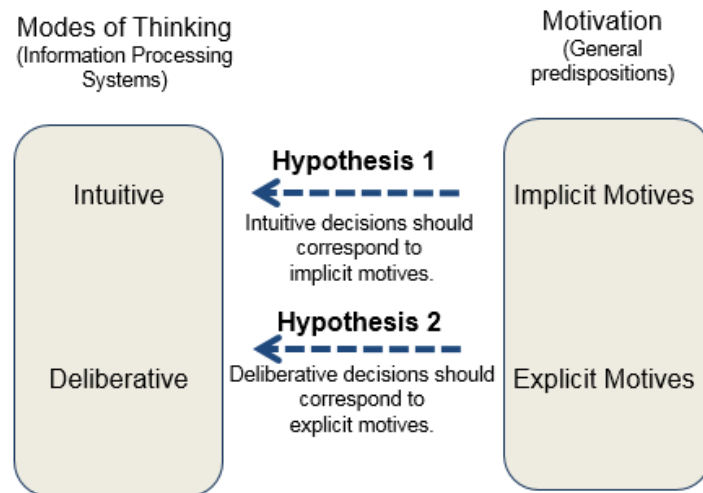


Figure 1.1 Main Hypotheses

These hypotheses will be tested across five experiments (a pilot and four main studies). The experiments share a basic rationale. In the first part of each study, implicit and explicit motives were assessed by their respective measures. In the second part, participants had to work on a series of decision tasks and an experimental manipulation forced them to make these decisions in either an intuitive or a deliberative manner (see Fig. 1.2). A crucial element of the decision tasks was that participants had to indicate their relative preference and evaluation for a set of three decision alternatives that represented each of the three basic motives: The first option reflects preference for achievement (e.g., performing challenging tasks, testing the limits of one's own skills), the second option represents preference for affiliation (e.g., working together in a group, helping and sharing resources) and the third option expresses preference for power (e.g., having command over others, being praised by a large audience).

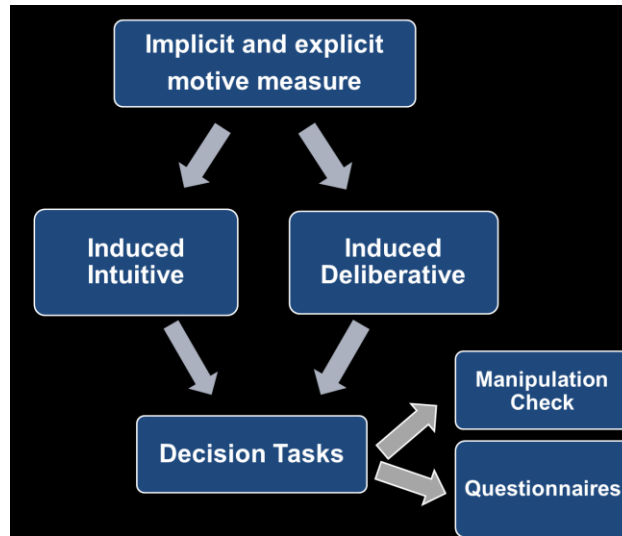


Figure 1.2 General procedure of experiments 1 to 4

If the hypotheses were supported, it is expected that choices made in the intuitive condition will reflect the strength of the implicit motives while choices made in the deliberative condition will reflect the strength of the explicit motives. Specifically, it is expected that the probability to choose a particular motive-related option is a function of the strength of the corresponding (implicit or explicit) motive, but only if the mode of decision making (intuitive vs. deliberative) matches the nature of the motive (implicit vs. explicit). Stated differently, the decision modes will moderate the effect of implicit and explicit motives on choices (see Fig. 1.3. for a representation of expected results).

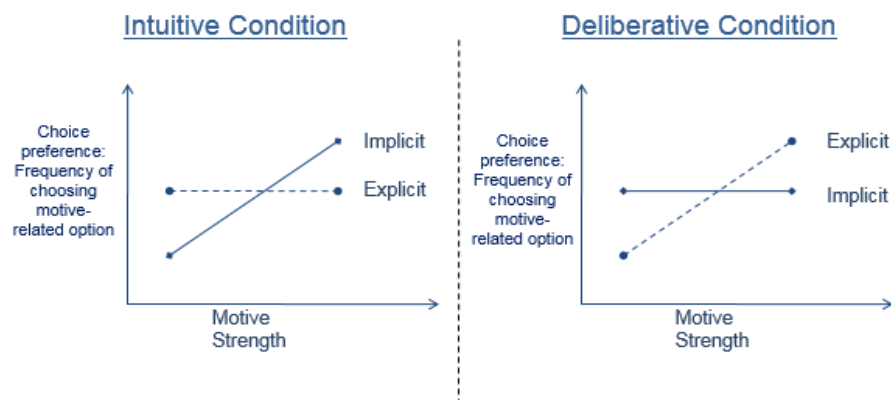


Figure 1.3 Expected results if hypotheses were supported. The relationship should apply to each motive: Achievement, Affiliation and Power.

1.4 Overview of Studies

In the pilot study, decision tasks were of the following format: Six scenarios with two options each were presented to the participants. These options described concrete activities reflecting either a low or a high level of the achievement motive. Participants' task was to select the option they preferred. In the intuitive group, participants were instructed to make their decisions intuitively and as fast as they can. In the deliberative group, participants were instructed to make their decisions carefully and to list down reasons for their decisions. Reliability analyses showed that there were no consistencies in the answers of the participants across the six scenarios. Additionally, the scenarios were uncorrelated with the strength of the implicit as well as the explicit motives.

In Experiment 1, the decision tasks were modified. Instead of concrete activities, options of each scenario now described opportunities to satisfy achievement, affiliation or power motives. Participants' task was no longer to select between different degrees of one motive, rather their task was to select between the three different motives. Manipulation of intuitive/deliberative decision modes was induced in a similar way as in the pilot study (via instruction). We found evidence that contradicted our hypothesis. Implicit motives predicted choices and evaluations better in the deliberative as compared to the intuitive condition. This finding was found only for the power motive. No other significant interactions were found.

In Experiment 2, intuitive and deliberative instructions were modified in the following way: 1) In the intuitive condition, participants were instructed to focus solely on feelings, to imagine themselves being in the described situation and to rely on their first impression. 2) In the deliberative condition, participants were instructed to think as carefully as possible, to consider how others will view their decisions and to state the consequences of their decisions. We found weak support for the deliberation hypothesis; explicit motives predicted evaluation better in the deliberative as compared to the intuitive condition. This finding was found only for the affiliation motive. No other significant interactions were found.

In Experiment 3, we introduced a variant of the IAT as an additional measure of implicit motives. Our IAT measure did not predict choices, neither in the deliberative nor in the intuitive

condition. In Experiment 3, we again found that our implicit motive measure (Multi-Motive Grid) predicted ratings better in the deliberative as compared to the intuitive condition. This is a similar finding to Experiment 1 and it is contrary to the hypothesis. While in experiment 1 this effect was found in the power motive, in experiment 3 the result was found in the achievement motive.

In Experiment 4, three main changes were implemented. First, in order to increase the power of our analysis, we dropped our deliberative condition and increased the sample size of our intuitive condition. Second, we modified our decision tasks in order to reduce direct comparison of choices and to allow for more spontaneous responses in the following manners: (1) Choices and evaluative ratings for the decision options were separated into two blocks. Only after participants made their choices across all scenarios, the liking ratings for those options were initiated. (2) Participants did not select between three motive options, participants considered each option separately instead and selected either wanting or not wanting to pursue the activity. (3) Participants were asked whether they felt excited/happy/powerful after reading the achievement/affiliation/power options. We also replaced the Multi-Motive Grid by Picture Story Exercise as the measure of implicit motives. As an additional implicit motives measure, we administered Implicit Association Test (IAT). In experiment 4, we again found that only explicit motives significantly predicted choices and ratings of respective motives options. IAT results did not correlate with the implicit motives (measured by PSE) or with the explicit motives (measured by UMS) and did not predict decisions.

Chapter 2 Empirical Studies

2.1 Pilot Study

The pilot study aimed at testing the main hypotheses with regards to the achievement motive. Differential relations between motives and choice behaviors are expected depending on the choice condition, with implicit motives predicting intuitive choices and explicit motives predicting deliberative choices. Secondly, the study also aimed at testing the dependent variables that will be used in further experiments, namely the scenario-based decision tasks. Scenarios were created with options that are either high or low in the achievement motive content. If the scenarios captured this content well, we would expect a positive correlation between the frequency of high achievement choice and the achievement motive strength of the participants. Six scenarios were created and we expect choices of participants to be consistent across the scenarios.

2.1.1 Method

Participants

Eighty students of the Friedrich-Schiller-University Jena took part in this paper-and-pen study ran in July 2012. Participation was rewarded with 2 Euro.

Procedure

The experiment started with an assessment of implicit and explicit motives (the order of these assessments was counterbalanced between participants). Following the assessment of motives, participants had to answer decision tasks either in the intuitive or the deliberative condition (the assignment of participants to conditions was made on a random basis).

As a measure of implicit motives the Multi-Motive Grid (Sokolowski et al., 2000) was used. As a measure of explicit motives the Achievement Motives Scale - Revised (Lang & Fries, 2006) was used. Both measurements measured hope and fear components of the achievement motive.

Materials¹

Motives Measure

Implicit Motives Measure: *Multi-Motive Grid* (Sokolowski et al., 2000).

The Multi-Motive Grid (MMG) measures hope and fear components of Achievement, Affiliation and Power motives. Fourteen pictures were presented to the participants in a fixed sequence. For each picture, a list of corresponding sentences was displayed. Participants' task was to decide whether the sentences apply to the picture presented. For each sentence, participants responded with a 'yes' or a 'no'. In total, there were 12 unique sentences that were presented repeatedly. Each motive component was represented by two sentences. To illustrate, "Feeling good about meeting other people" represented hope for affiliation and "Feeling good about one's competence" represented hope for achievement. For each motive component, a sum of scores (1 count for each 'yes') throughout the 14 pictures was computed. In this study, only the achievement motive (hope and fear component) was relevant. Hope for success score was calculated by aggregating (total sum) 12 statements across six relevant pictures (#1, #6, #7, #8, #10 and #12). Similarly, Fear of Failure score was calculated by aggregating 12 statements across six relevant pictures (#3, #4, #5, #6, #7 and #12). The reliability of hope for success scale was Cronbach's $\alpha = .59$, $M = 6.90$, $SD = 2.07$ and the reliability of fear for failure scale was $\alpha = .54$, $M = 4.00$, $SD = 2.32$.

Explicit Motives Measure: *Achievement Motives Scale - Revised* (Lang & Fries, 2006).

The Achievement Motive Scale (AMS) is a 24-items questionnaire measuring hope and fear components of the Achievement motive. Participants indicated the extent to which each of the statements corresponds to themselves; 'exactly like me' to 'very unlike me' (4-point scale). The

¹ See Appendix A for the complete material set of Pilot Study 1.

AMS Revised version (AMS-R) reduced the 24 statements to 10 statements. Hope for Success score was calculated by averaging the agreement scores across statements such as “I enjoy situations, in which I can make use of my abilities”. Similarly Fear of Failure score was calculated by averaging the agreement scores across five statements such as “I feel uneasy to do something if I am not sure of succeeding”. In this study, reliability of hope for success scale was $\alpha = .60$, $M = 3.17$, $SD = .41$ and reliability of fear of failure scale was $\alpha = .81$, $M = 2.51$, $SD = .64$.

Table 1.1 Correlations between Multi-Motive Grid Hope for Success (HS) and Multi-Motive Grid Fear of Failure (FF) with Achievement Motive Scale (HS & FF).

	MMG- HS	MMG- FF	AMS - HS	AMS - FF
MMG- HS	-			
MMG- FF	.20	-		
AMS - HS	.01	-.22*	-	
AMS - FF	-.06	.19	-.03	-

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

Looking only at the matching motives (implicit HS and explicit HS, implicit FF and explicit FF), there were no significant correlations between implicit motives (measured by MMG) and explicit motives (measured by AMS). There is however a significant negative correlation between implicit fear of failure and explicit hope for success with $r = -.22$.

Experimental Manipulation

The intuitive condition consisted of (1) information that making decisions using intuition is beneficial and making decisions using deliberation could be detrimental, (2) instruction for participants to decide intuitively during the remainder of the study by following their gut feelings and avoiding rational calculation.

The deliberative condition consisted of (1) information that making decision using deliberation is beneficial and that making decision using intuition could be detrimental, (2) instruction for participants to decide deliberatively, thinking carefully and taking time in making decisions, (3) participants were asked to write down three reasons for selecting each particular option in the decision tasks.

Decision Tasks

As decision tasks, six scenarios were presented to the participants. Each scenario consisted of a situation, e.g. “There are two job offers available”, followed by descriptions of two options. The two options were either high or low in achievement motive. To illustrate “Job 1 followed a specified protocol and maintenance of routines” (low achievement) while “Job 2 encouraged active management of a store and attainment of new suppliers” (high achievement). Participants’ task was to select the option they prefer. Across the six scenarios, frequency (0 to 6) of selecting high achievement option was computed ($M = 2.87$, $SD = 1.34$). Reliability of high achievement option being selected across scenarios was very low at $\alpha = .26$.

2.1.2 Results

In order to test differential relations between motives and choice behavior, the aggregated achievement-choice score for the decision scenarios was predicted by the implicit and the explicit motives, the intuitive vs. deliberative choice condition, and the interactions of motives and decision modes. All predictor variables were centered before entering them into the regression and before computing the interaction terms, centering was done in order to allow for a simultaneous estimation of main effects and interactions (Aiken & West, 1991). The results of this analysis were presented in Table 1.2

Table 1.2 Standardized regression coefficients for regressions of motive-related choices on the corresponding implicit and explicit motives, condition (deliberative vs. intuitive) and their interaction.

	Implicit Motive (MMG)	Explicit Motive (AMS)
	High Achievement Choice ^a	High Achievement Choice ^a
Achievement – Hope for Success		
motive	-.03	.13
condition ^b	.15	-.15
motive x condition	-.01	-.13
R ²	.02	.06
Achievement – Fear of Failure		
motive	-.28*	-.22*
condition ^b	-.11	-.17
motive x condition	.15	-.15
R ²	.09 ⁺	.09 ⁺

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

^a Because choices are either high or low, low achievement choice is the inverse of high achievement choice.

^b 1 = intuitive mode, 2 = deliberative mode

There was a negative effect of implicit achievement motive (MMG) and explicit achievement motive (AMS), indicating that across intuitive and deliberative conditions, achievement choices were predicted by low fear of failure score. In contrast, the hope component of both the implicit and the explicit motives did not predict achievement choices. Decision mode (deliberative vs. intuitive) did not have an influence on choices, nor did we find any indication of interactions between decision mode and motive variables.

2.1.3 Discussions

Findings of the pilot study did not support our predictions, that is, we did not find differential relations of explicit and implicit measures of the achievement motive with achievement choices depending on the decision mode.

We did find a general tendency of fear of failure (of both implicit and explicit motives) in predicting achievement choices. However we did not find any tendency of hope for success dimension in predicting achievement choices. Reliability analysis indicated lack of consistency of choices across scenarios. Despite significant predictive tendency with regards to fear of failure, the low reliability indicated that the assessment of achievement choices in the present study was suboptimal.

The low reliability (choices across six scenarios were uncorrelated) indicates that the scenarios might have tapped into different underlying variables (e.g., habits of participants and/or the specifics of the scenarios) more so than the general underlying factor of low/high achievement motive.

In the next experiment, we generalized our decision tasks. Instead of concrete activities, we created options that describe classes of activities. These descriptions incorporate definitions of each of the three motives.

2.2 Experiment 1

Experiment 1 aimed to test the main hypotheses of this dissertation. It is expected that decision mode moderates the relationship between strength of motives and selection of options. In particular, we expect explicit motives to predict deliberative choices and implicit motives to predict intuitive choices. In this experiment, we added evaluations of motive-related options (liking ratings). We expect similar moderation with regards to these ratings. Explicit motives should predict liking ratings in the deliberative condition whereas implicit motives should predict liking ratings in the intuitive condition.

Secondly, this study aimed to introduce a new dependent variable, an improved version of the scenario-based decision task. As opposed to concrete activities, only abstract descriptions of activities were utilized as motive options. We also extended our decision task to include all three motives; achievement, affiliation and power motives. If these scenarios captured motive-related content, we expect that the choices and ratings of motive-related options are consistent across scenarios and are predicted by the implicit and the explicit motives.

2.2.1 Method

Participants

Sixty-six people participated in this study ran at the Friedrich-Schiller-University in July 2013. Three participants (Subject #14, #20 and #50) were excluded from further analyses due to their age (> 2 SD). To balance number of observations in both intuitive and deliberative group, Subject #62 (non-native speaker) was excluded from further analyses. As such, the sample for Experiment 1 included sixty-two students (63% female, mean age = 23 years old). On average, participation was awarded with €5.

Procedure

The experiment started with an assessment of implicit and explicit motives. Measure of implicit motives was Multi-Motive-Grid (Sokolowski et al., 2000) and measure of explicit motives was Unified Motive Scales (Schönbrodt & Gerstenberg, 2012). Following the assessment of motives, participants were randomly assigned either to the intuitive or the deliberative condition. In this experiment, a manipulation check was added as well as an alternative moderator variable assessed by Preference for Intuition and Deliberation Questionnaires (PID; Betsch, 2004).

Materials²

Motive Measures

Implicit Motive Measure: *Multi-Motive Grid* (Sokolowski et al., 2000).

Implicit motives measures were identical to the pilot study. Reliability and descriptives of the measures were summarized in Table 1.3.

Table 1.3 Reliability (Cronbach's alpha), Mean Scores, and Standard Deviation of Implicit and Explicit Measures for Achievement (Hope for Success and Fear of Failure), Affiliation (Hope for Affiliation and Fear of Affiliation) and Power (Hope for Control and Fear of Losing Control).

	Multi-Motive Grid	Unified Motive Scores
Hope Component		
Achievement – HS	$\alpha = .51$, M = 7.00, SD = 1.91	$\alpha = .86$, M = 4.35, SD = .83
Affiliation - HA	$\alpha = .56$, M = 6.53, SD = 2.10	$\alpha = .86$, M = 4.04, SD = .83
Power - HC	$\alpha = .69$, M = 8.00, SD = 2.47	$\alpha = .94$, M = 3.53, SD = 1.15
Fear Component		
Achievement – FF	$\alpha = .60$, M = 4.76, SD = 2.27	$\alpha = .60$, M = 3.80, SD = 1.01
Affiliation - FR	$\alpha = .62$, M = 6.71, SD = 2.39	$\alpha = .59$, M = 3.85, SD = 1.09
Power - FC	$\alpha = .66$, M = 7.35, SD = 2.54	$\alpha = .74$, M = 3.90, SD = .96

HS = Hope for Success, HA = Hope for Affiliation, HC = Hope for Control
FF = Fear of Failure, FA = Fear of Affiliation, FC = Fear of Losing Control

² See Appendix B for the complete material set of Experiment 1.

Explicit Motive Measure: *Unified Motive Scales* (Schönbrodt & Gerstenberg, 2012)

The Unified Motives Scales (UMS) was used instead of the Achievement Motives Scale (AMS) because the UMS assessed all three motives while the AMS assessed only the achievement motive. The UMS measured both hope and fear components of the motives. This questionnaire consisted of two sets of statements scaled on a 6-point scale: The first part consisted of 36 statements scaled from “stimmt nicht zu (disagree)” to “stimmt zu (agree)” while the second part consisted of 18 goals statements scaled from “nicht wichtig (not important)” to “sehr wichtig (very important)”. Average scores across the corresponding statements were computed as scores for each of the motive components. The UMS incorporated items from various questionnaires such as the PVQ (Personal Values Questionnaire; McClelland 1991; German version as used in Engeser & Langens, 2010), GOALS (Pöhlmann & Brunstein, 1997), PRF (Personality Research Form), Mehrabian’s scales for affiliation and sensitivity to rejection (MAFF and MSR, Mehrabian, 1994; German version as used in Engeser & Langens, 2010) and Achievement Motive Scale (AMS; Lang & Fries, 2006).

Table of correlations between implicit motives (measured by Multi-Motive Grid) and explicit motives (measured by Unified Motive Scales) is available in Appendix B. Looking only at the matching motives none of the pair correlations were significant except for implicit and explicit hope for control with $r = .31$.

Experimental Manipulation

Experimental manipulation was identical to the pilot study (see Appendix A).

Manipulation Checks

Manipulation checks were added to the experiment:

- (1) Participants were asked directly after the decision tasks how they had made their decisions. Definitions of intuitive and deliberative were taken from Preference for Intuition and

Deliberation questionnaire (Betsch, 2004). Ten questions were formulated consisting of five intuitive, e.g. “While making decisions on the scenario, how much did your feelings play a role?” and five deliberative questions, e.g. “While making decisions on the scenario, to what extent have you think them through?”. Average score of the five intuitive statements was computed as the manipulation check score for the intuitive condition, $M = 3.84$, $SD = .68$, Cronbach’s $\alpha = .53$ and average score of the five deliberative statements was computed as the manipulation check score for the deliberative condition, $M = 3.03$, $SD = .89$, $\alpha = .77$.

(2) The Cognitive Reflection Test (CRT; Frederick, 2005) and similar questions were asked in-between the decision tasks. The CRT consists of questions that have intuitively wrong answers and deliberately correct ones. Percentages of intuitive and deliberative answers per condition were calculated. It is expected that higher percentage of intuitive answers is found in the intuitive condition and higher percentage of deliberative answers is found in the deliberative condition. This was unfortunately not the case (see Table 1.4). At the end of the experiment, participants were asked whether they recognized these CRT questions from other contexts (most did not).

Decision Tasks

Decision tasks consisted of eight scenarios with three options. Each of the three options incorporated definitions of the three motives. The achievement option was described as an activity that is moderately challenging and provides participants with accurate feedback, the power option was described as an activity that requires participants to influence and exercise control over others and the affiliation option was described as an activity that requires sympathy and teamwork. Scenarios were presented in a random order to the participants. All three motive options and their corresponding scenarios were presented simultaneously on a computer screen. Participants’ task was to decide which of the three options they preferred. Participants were also asked to rate how much they like each of the three options. The order of choice and rating tasks depended on the manipulation conditions. In the intuitive condition, the choice task was presented first followed by the rating task. In the deliberative condition, the rating task was presented first followed by the choice task. In the intuitive condition, we did not want the ratings to influence the choices of the participants whereas in the deliberative condition, we expected

that the participants were consistently making their choices with the options they liked best. Additionally, in the deliberative condition participants were instructed to write down reasons for why each option was attractive or not attractive. Participants must spend at least 1 minute in this writing task. These procedures were repeated until all eight scenarios were presented.

Choices of the participants were aggregated by taking the frequency in which the corresponding motive options was selected, out of 8 scenarios on average participants selected 3.7 times the achievement option, 3.2 times the affiliation option and 1.1 times the power option. Reliability analysis indicated low inter-item correlation with $\alpha=.43$ for choices of achievement options, $\alpha=.60$ for choices of affiliation option and $\alpha=.36$ for choices of power option. The variable 'Rating' represented the average score of liking for each motive options across the 8 scenarios; Reliability analysis indicated acceptable inter-item correlations with $\alpha=.50$ for ratings of achievement options, $\alpha=.64$ for ratings of affiliation options and $\alpha=.66$ for ratings of power options.

Preference for Intuition and Deliberation Questionnaire (*Betsch, 2004*)

Preference for Intuition and Deliberation (PID; Betsch, 2004) is a personality questionnaire that measures the extent of participants' preference in deciding intuitively and deliberately. The intuitive and the deliberative scale were treated as separate independent variables. In total it consisted of 20 statements scaled from "stimme nicht zu" (unlike me at all) to "stimme volle zu" (exactly like me) with 10 statements representing intuitive preference, e.g. "I pay close attention to my inner feelings" and 10 statements representing deliberative preference, e.g. "I think before I act". As half of the PID items were modified and used as manipulation checks, only 10 items (the other half) were administered in their original form. It is possible that due to chronic preference for either intuitive or deliberative mode, participants were unable to consciously adapt their decision modes. Thus, this questionnaire was administered as an alternative moderator variable. Average score was computed across five intuitive statements as preference for intuition score, $\alpha = .72$, $M = 3.40$, $SD = .74$ and across five deliberative statements as preference for deliberation score, $\alpha = .52$, $M = 3.46$, $SD = .79$.

2.2.2 Results

A one-way ANOVA on manipulation check questionnaire across decision modes indicated that participants decided more intuitively in the intuitive condition and more deliberately in the deliberative condition. In the cognitive reflection test, participants answered on average half of the questions intuitively and the other half deliberately regardless of the experimental conditions.

Table 1.4 Mean Scores, Standard Deviation and One-way ANOVA results on the Manipulation Checks across Intuitive and Deliberative Experimental Conditions

Post-Decision Questionnaire			
Manipulation Condition	How Intuitive were you?		How deliberative were you?
Intuitive	4.03 (.54)		2.68 (.82)
Deliberative	3.65 (.76)		3.28 (.83)
One-way ANOVA	F(1,64) = 5.47, $p = .023$		F(1,64) = 11.97, $p = .001$
Cognitive Reflection Task			
Manipulation Condition	% of Intuitive Answer	% of Deliberative Ans.	% of non-categorized
Intuitive	40.91 (20.45)	50.00 (21.65)	9.09 (11.09)
Deliberative	34.34 (24.63)	53.03 (28.09)	12.63 (18.18)
One-way ANOVA	F(1,64) = 1.38, $p = .24$	F(1,64) = .24, $p = .63$	F(1,64) = .91, $p = .34$

As in the previous study, in order to test differential relations between motives and choice behavior, the aggregated motive-choice score for the decision scenarios was predicted by the implicit and explicit motives, the intuitive vs. deliberative choice condition and the interaction of motive and choice mode. The analyses were done only on the matching motives between predictor and dependent variables: Implicit and explicit achievement motives were entered into regression predicting choices and ratings of achievement options, implicit and explicit affiliation motives were entered into regression predicting choices and ratings of affiliation option and implicit and explicit power motives were entered into regression predicting choices and ratings of power option. The mismatch motives regressions are available in Appendix C. The moderated regression analyses were conducted separately for the motive-choice score and for the motive-ratings score. All predictor variables were centered before entering them into the regression and before computing the interaction terms. The results of these analyses were summarized in table

1.5 for choices and ratings of the achievement options, in table 1.6 for choices and ratings of the affiliation options and in table 1.7 for choices and ratings of the power options.

Table 1.5 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit and explicit motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Motive		Explicit Motive	
	Choices	Ratings	Choices	Ratings
Achievement – Hope for Success				
motive	.16	.03	.06	.27*
condition ^a	-.07	.05	-.13	-.01
motive x condition	.15	.13	.11	.11
R ²	.06	.02	.03	.07
Achievement – Fear of Failure				
motive	-.16	-.11	.23	.06
condition ^a	-.13	.04	-.14	.04
motive x condition	.08	.00	-.19	-.06
R ²	.04	.01	.06	.01

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Table 1.6 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit and explicit motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Motive		Explicit Motive	
	Choices	Ratings	Choices	Ratings
Affiliation– Hope for Affiliation				
motive	-.05	-.04	.40**	.49**
condition ^a	.02	-.05	.01	-.07
motive x condition	-.02	-.10	.03	-.00
R ²	.00	.02	.16*	.25**
Affiliation– Fear of Rejection				
motive	-.07	.09	-.19	.02
condition ^a	.01	-.05	.05	-.06
motive x condition	-.05	-.03	.01	-.01
R ²	.01	.01	.03	.00

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Table 1.7 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit and explicit motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Motive		Explicit Motive	
	Choices	Ratings	Choices	Ratings
Power– Hope for Power				
motive	.18	.29*	.34**	.54**
condition ^a	.05	-.05	-.01	-.14
motive x condition	.22 ⁺	.23 ⁺	.10	.07
R ²	.09	.16*	.13*	.31**
Power– Fear of loss of control				
motive	-.02	.03	.24 ⁺	.30*
condition ^a	-.00	-.13	-.03	-.17
motive x condition	-.11	-.13	-.05	.12
R ²	.01	.03	.06	.13*

⁺ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

There was a positive effect of explicit achievement, affiliation and power assessed with UMS, indicating that across intuitive and deliberative conditions, achievement ratings were predicted by high hope for success, affiliation choices and ratings were predicted by high hope for affiliation and power ratings were predicted by high hope for control. In contrast, implicit assessment of all three motives did not predict choices or ratings of motives option. With regards to the avoidance dimension, fear of failure and fear of rejection assessed with both MMG and UMS did not predict choices or ratings of motive options. Similarly, fear of losing control, assessed with the MMG, did not predict choices or ratings of power options. We did find a positive effect of fear of losing control when assessed with the UMS, indicating that across intuitive and deliberative conditions, power choices and ratings were predicted by explicit fear of losing control.

Decision mode (deliberative vs. intuitive) did not have a strong or consistent moderating influence on choices or ratings. We did find a few scattered indications of interactions between decision mode and motive variables, with a marginal interaction effect for implicit hope for control. The positive regression weight for the interaction term indicates that power choices and

ratings were predicted by implicit hope for control more so in the deliberative as compared to the intuitive condition, which is contrary to our predictions. The interaction effects were significant only in 2 out of 12 cases for the implicit motives, the direction of the interactions corresponded to expectation in none of these cases. For the explicit motives, none out of the 12 interactions were significant.

As an alternative moderator variable (replacing the decision mode), the difference between preference for intuition and preference for deliberation of each participant was calculated and entered into regression. This calculation meant that positive values indicated stronger preference for deliberation and negative values indicated stronger preference for intuition. The results were summarized in Appendix D. With regards to the hypotheses, interaction terms between PID and explicit achievement motive were significant in predicting choices and ratings of achievement options. The regression coefficient of these interactions were positive indicating that the relation between explicit achievement motive and choices and ratings of achievement options was stronger for participants scoring high in $\Delta_{\text{deliberation-intuition}}$ compared to those scoring low. We did not find any other significant interaction.

Importantly, the three-way interactions of motives x decision instruction (intuitive vs. deliberative) x decision mode preference (PID) did not reach significance in any of the analyses, indicating that the influence of instructed decision (intuitive vs. deliberative) was not moderated by individual differences in decision mode preference. In both conditions, mean difference of the mode preference did not differ, $F(1,64) = .01, p > .10$, M_{Δ} in the intuitive condition = .04 (1.18) and M_{Δ} in the deliberative condition = .07 (1.08).

Combined with our additional analyses of the PID as moderator variable, readers are reminded that interaction effects were significant only in 4 out of 24 cases, 2 out of the four cases referred to the explicit motive and the other 2 referred to the implicit motive. While interactions referring to explicit motives corresponded to the expectation, interactions within the implicit motives were opposite of the expectation.

2.2.3 Discussions

In this experiment we did not find any evidence of the expected interactions between explicit motives and responses toward options (neither in approach nor avoidance dimension). The only near-significant interaction terms that we found were between implicit hope for control in predicting responses of power option (choices and ratings). In both choices and ratings of power option, the interaction term was positive. It indicated that implicit hope for control predicted choices and ratings of power option better in the deliberative as compared to the intuitive condition. This goes contrary to our hypothesis.

One way of going forward is to accept that our hypotheses were mistaken and that in fact implicit motives predict choices and ratings better in the deliberative as compared to the intuitive condition. This might well be the case if we redefined our intuitive condition as being superficial, lacking depth of understanding and externally dependent. At the same time, the deliberative condition could be redefined as being reflective; a self-reflection state in which participants honestly consult their past experiences in determining their future choices. The next experiment should transmit the meaning of intuitive and deliberative decision modes more clearly to participants. The intuitive condition as originally hypothesized should create a state of self-introspection while the deliberative condition should induce a tendency to make objective comparisons between options.

Secondly, we did find main effects of explicit motives in predicting choices and ratings of achievement, affiliation and power motives across both decision modes. We did not find any main effect with regards to the implicit motives. The fact that we found explicit but not implicit motive (except for power) predicting responses in the decision task raises the question whether the scenario-based decision task captured only those components of motives that are part of the explicit motive system and not those that are part of the implicit motive system. Given that intuitive condition should have been a better match with implicit motives due to their shared automatic nature, we would expect that implicit measurement of motive would converge with motive-related response in intuitive condition, but this was not the case.

When we conceptualized decision mode as chronic preferences, we did find an interaction effect supporting our hypothesis. A high preference for the deliberative mode accentuated the predictive power of explicit achievement motive on choices and ratings of achievement options. This finding adds further support to the suspicion that both formats of the decision task tend to capture deliberative processes and are thus sensitive to explicit motives only.

Further complication arises from the fact that the Multi-Motive Grid as measurement of implicit motive was challenged. Schultheiss and colleagues argued that the Multi-Motive Grid (MMG) due to their forced-choice property is more likely to measure explicit as opposed to implicit motives. If the MMG indeed measured explicit motives, we would not be surprised to find that the MMG power motive predicted responses better in the deliberative as compared to the intuitive condition. In this study, indeed we found that implicit and explicit power motives were significantly correlated ($r = .31$).

In order to tap into the implicit motive, given that MMG sometimes measures explicit motive, an alternative measurement is required. Lastly, we found interaction effect only with regards to the power motive. Further experiments should clarify whether the influence of decision mode only works within the power domain or if it also extends to the achievement and affiliation motives.

2.3 Experiment 2

Experiment 2 tried to remedy some of the potential problems found in Experiment 1. Intuitive and deliberative instructions were clarified with the hope that participants entered a self-reflective state as opposed to a merely superficial state of heuristically based decision making. Secondly, this study aimed to replicate earlier finding that implicit hope for control interacted with decision mode in predicting choices and ratings of power options. As such, only power motives were assessed.

2.3.1 Method

Participants

Eighty participants were recruited for the experiment during the event “Long Night of Science”, 29th November 2013, at the Friedrich-Schiller-University, Jena. Participation was voluntary without any monetary reward.

Procedure and materials³

Implicit power motive was measured using the Multi-Motive Grid (Sokolowski et al., 2000). Only pictures consisting of sentences relevant for the power motive were administered. Reliability of the implicit hope for control in this experiment was very low at $M = 2.31 (.82)$, $\alpha = .36$.

After completing the MMG, participants were assigned either to the intuitive or the deliberative condition. A set of instructions were given depending on participants’ assignment. In the deliberative condition, participants were informed that making decisions deliberately lead to good decisions. Participants were instructed to complete the upcoming decision tasks (1) by thinking about them as carefully as possible, (2) by thinking about what others will think of their decisions and (3) by considering the consequences of the decisions they will make. In the

³ See Appendix E for the complete material set of Experiment 2.

intuitive condition, participants were informed that making decisions intuitively lead to good decisions. Participants were instructed to complete the upcoming decisions tasks (1) by focusing on their own feelings and ignoring other factors, (2) by imagining that they were themselves in the situation and how pleasant or unpleasant it would be and (3) by trusting their first impression and trying not to deliberate or think deeply about the situation.

In the decision task, three out of the eight scenarios used in the previous studies were selected. These three scenarios had the highest count of power option selections indicating that in these scenarios on average power options were more desirable. As power options have the lowest desirability across the three motives, these scenarios were selected in order to produce a higher variance within the choices and the ratings of power options. Participants were again asked to select one out of three options and to rate each of these options. The order of choosing and evaluating were identical to the previous experiments. Slight changes were administered with regard to the dimension in which participants made their evaluation. In the previous experiments, “evaluation” (bewerte) was used for both conditions’ rating scales. In this experiment, within the deliberative condition, participants were asked to rate each option using the scale “bewerte” (evaluated positive to negative) and within the intuitive condition the scale was “löst unangenehme Gefühle in mir aus/löst angenehme Gefühle in mir aus” (produces pleasant or unpleasant feelings). The changes of the scale were done in order to provide better matches with the respective conditions; the deliberative condition focused on evaluating (bewerte) while the intuitive condition focused on feelings (Gefühle).

Reliability of choice frequency and mean score rating of motive options across the three scenarios were low with $M = 1.43$ (1.00), $\alpha = .47$ for achievement choice, $M = 1.34$ (.99), $\alpha = .37$ for affiliation choice and $M = .24$ (.56), $\alpha = .55$ for power choice. Similarly, $M = 3.83$ (.88), $\alpha = .41$ for achievement rating, $M = 3.92$ (.75), $\alpha = .41$ for affiliation rating and $M = 2.29$ (.91), $\alpha = .43$ for power rating.

Following the decision tasks, all participants completed the Unified Motive Scales (Schönbrodt & Gerstenberg, 2012). Unlike the previous studies, fear components of the motives were not assessed. There had been no evidence that the fear components provide consistent or informative pattern of results. Similarly, it is unclear what could be derived from the fear components as the expected directions of the effects are unclear. As such, we decided not to assess the fear

components. Similar to the previous experiments, reliabilities of the UMS scale were highly satisfactory at $M = 4.44$ (.91), $\alpha = .90$ for explicit hope for success, $M = 4.22$ (.86), $\alpha = .88$ for explicit hope for affiliation and $M = 3.25$ (1.03), $\alpha = .91$ for explicit hope for control.

In the previous studies, sometimes UMS was assessed before the decision tasks for the purpose of counterbalancing. In this study, UMS was assessed only after the decision task because in this experiment we wanted to focus on the interaction between the implicit power motive and the intuitive condition. In the previous experiments, explicit motives were strong predictor of choices and ratings while implicit motives were not. We wanted to eliminate the possibility that in half of the participants, explicit motives became too salient or that participants were aiming to be consistent with their explicit motives thus reducing the influence of implicit motives on decisions. In other words, we want to increase the power of the current study.

Lastly, participants had to answer ten questions as manipulation checks. The manipulation check questions were identical to the previous experiment. The Cognitive Reflection Test was removed because in the previous study the CRT result was uncorrelated with the manipulation check questionnaire results. An average score of the five intuitive statements across conditions was 3.82 with $SD = .73$ and reliability $\alpha = .64$. Similarly, an average score of the five deliberative statements across conditions was = 2.92 with $SD = .91$ and reliability $\alpha = .81$.

2.3.2 Results

Manipulation check. One-way ANOVA indicated that participants in the deliberative condition reported to have made their decisions more deliberately than participants in the intuitive condition. Participants in the intuitive condition, however, did not report to have made their decisions more intuitively than participants in the deliberative condition.

Table 2.1 Mean Scores, Standard Deviation, and One-way ANOVA results on the Manipulation Checks across Intuitive and Deliberative Experimental Conditions

Post-Decision Questionnaire		
Manipulation Condition	How Intuitive were you?	How deliberative were you?
Intuitive	3.76 (.73)	2.67 (.83)
Deliberative	3.89 (.74)	3.21 (.92)
One-way ANOVA	$F(1,78) = .58, p > .10$	$F(1,78) = 7.59, p = .007$

Correlations. Correlations between implicit motives measured by MMG and explicit motives measured by UMS were presented in table 2.2. Contrary to experiment 1, we observed that in this study MMG-Hope for Control was uncorrelated with UMS-Hope for Control ($r = .09$).

Table 2.2 Correlations between Implicit Motives (MMG) and Explicit Motives (UMS)

	MMG-HC	UMS-HS	UMS- HA	UMS-HC
MMG-HC	-			
UMS-HS	.14	-		
UMS-HA	.38**	.36**	-	
UMS-HC	.09	.59**	.29**	-

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

MMG = Multi-Motive Grid, UMS = Unified Motive Scales; HS = Hope for Success, HA = Hope for Affiliation, HC = Hope for Control

Main analyses. The analyses for experiment 2 proceed similar to the previous experiment. The aggregated motive-choice score for the decision scenarios was predicted by the implicit and explicit motives, the intuitive vs. deliberative choice condition and the interaction of motives and decision mode. As in experiment 1, only match conditions were analyzed. In this case, only the power motive predicting choices and ratings of power options were available for analysis. The mismatch conditions, in which e.g. power motive was used to predict choices and ratings of achievement or affiliation options, are available in Appendix C.

The moderated regression analysis was done separately for the motive-choice score and for the motive-rating score. All predictor variables were centered before entering them into the regression and before computing the interaction terms. The results of these analyses were presented in tables summarizing the results of choices and ratings for power options (table 2.3).

Table 2.3 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit and explicit motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Motive		Explicit Motive	
	Choices	Ratings	Choices	Ratings
Power– Hope for Power				
motive	-.27*	.09	.29*	.51**
condition ^a	.02	.13	.08	-.12
motive x condition	-.02	.15	-.02	.04
R ²	.08	.06	.09 ⁺	.27**

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

In sum, the following pattern of findings emerged: Replicating the previous experiment we found strong positive main effect of explicit power motive predicting choices and ratings of power options. We also found a strong *negative* effect of implicit power motive in predicting choices and ratings of power option. We did not replicate the interaction effect found in Study 1: There was no significant interaction between the implicit hope for control and the manipulation condition.

2.3.3 Discussions

In contrast to experiment 1, we did not replicate the interaction effect found between implicit power motive and decision mode. In experiment 1, MMG measurement of hope for control was highly correlated with UMS measurement of hope for control. In this experiment, the two measures were not correlated. The combined findings suggest that it is the explicit motive component measured by the MMG in experiment 1 that caused the interaction effect with deliberative mode, as the hypothesis would predict. The UMS-hope for control itself, however, did not interact with decision mode in predicting choices and ratings of power options. This lack of interaction, which was found in both Experiment 1 and 2, casts doubt on whether explicit motives and decisions were really moderated by decision mode. In order to clarify the twin problems of measurement error and hypotheses testing, an alternative measurement of implicit motive will be introduced in the upcoming experiment.

2.4 Experiment 3

Experiment 3 aimed at testing the main hypotheses and introducing personalized Implicit Association Test (IAT) as an alternative measure of implicit motives. The rationale of the study followed that of the previous experiments.

2.4.1 Method

Participants

Eighty students of the Friedrich-Schiller-University Jena were recruited for the study (9th and 14th April, 2014). Five participants (#1, #3, #25, #41 and #62) were excluded from further analyses due to their age (≥ 2 SD) resulting in 75 observations in total (57% female, mean age = 23). Participation was rewarded with €4 euro per participant.

Procedure and materials⁴

Similar to the previous experiments, implicit and explicit motives were first assessed followed by the experimental manipulation via instructions. Decision tasks were completed afterwards followed by the manipulation check.

Implicit motives were assessed via Multi-Motive Grid (Sokolowski et al., 2000) and explicit motives were assessed via Unified Motive (Schönbrodt & Gerstenberg, 2012). Fear components of motives were not assessed. Again, this was due to the difficulty of determining the direction of results of the fear motive components: It is unclear whether fear motivation lead to a heightened or a lessened effort in pursuit of the motive fulfillment.

In addition to the two measurements mentioned above, a personalized IAT was administered as an alternative implicit motive measure. The IAT, as with other motives measure, was administered before the experimental manipulation.

⁴ See Appendix F for the complete material set of Experiment 3.

Table 3.1 Reliability (Cronbach’s alpha), Mean Scores, and Standard Deviation of Implicit and Explicit Measures for Achievement (Hope for Success), Affiliation (Hope for Affiliation) and Power (Hope for Control).

Hope Component	Multi-Motive Grid (frequency)	Unified Motive Scores (mean)
Achievement – HS	M = 7.08 (2.41), $\alpha = .70$	M = 4.36 (.71), $\alpha = .85$
Affiliation - HA	M = 6.59 (2.28), $\alpha = .65$	M = 4.23 (.96), $\alpha = .92$
Power - HC	M = 8.64 (2.58), $\alpha = .74$	M = 3.46 (1.01), $\alpha = .91$

HS = Hope for Success, HA = Hope for Affiliation, HC = Hope for Control

Personalized Implicit Association Test (*Olson & Fazio, 2004*).

The personalized implicit association test (pIAT; Olson & Fazio, 2004) is a variant of an implicit association test (IAT; Greenwald, McGhee & Schwartz, 1998). The IAT is a reaction time based measure which was designed to detect the strength of a person’s automatic evaluative associations for various categories. The IAT is the most widely used test to measure individuals’ implicit attitudes (Greenwald, Poehlman, Uhlmann & Banaji, 2009). Although the IAT is not originally meant to assess implicit motives, a growing number of researchers have documented its potentials (Brunstein & Schmitt, 2004; Slabbinck, De Houwer, & Van Kenhove, 2013).

Task. In an IAT, two category labels are presented in two opposite sides of the computer screen (e.g. upper left and upper right corner). Target categories represent the categories that participants have an attitude towards (e.g. implicit motives). Attribute categories represent the dimension in which the attitudes are to be evaluated (I like vs. I don’t like). Participants’ task is to categorize the appropriate stimuli to the appropriate categories.

Target Stimuli. Due to the structure of the IAT, only two target categories are available for evaluation. As such, we need to condense our three motive systems into two categories. Such categorization was commonly done by grouping achievement and power as an agentic motive and affiliation as a communal motive (Brunstein, Schultheiss, & Grässman, 1998; Woike & Polo, 2001). The word ‘agentic’ and ‘communal’ are psychological jargons that non-psychologists may not be familiar with. Hence a different label, ‘Superiority’ was used to represent the agentic motive while ‘Good Relationship’ was used to represent the communal motive. As target stimuli, pictures depicting attainment of achievement, affiliation and power motives were used. Power and Affiliation pictures were taken from Slabbinck et al., 2011, while achievement pictures were taken based on ratings from a few expert colleagues.

Attribute Stimuli. The idea of personalized IAT is to present participants with attribute stimuli that could be positive or negative depending on participants' personal preference. Motives as well as attitudes could represent the preference of individuals themselves or the internalized preference of society in which the individuals are part of. In measuring the implicit motive, we are interested in the earlier definition of preference. In order to increase the influence of personalized preference over societal preference, the personalized IAT was utilized. In addition to positive attribute stimuli such as 'nice' and 'friendly' and negative attribute stimuli such as 'hostile' and 'mean', attribute stimuli that are ambiguous in valence such as 'frugal' and 'ambitious' were added. Participants may decide whether the ambivalent stimuli belong to the category 'I like' or 'I don't like'. This stands in contrast to the standard IAT where participants are penalized for incorrect categorization of the attribute stimuli.

IAT Effect. Categorization of the IAT was done by pressing buttons that correspond to the category (left button, e.g. keyboard key 'd', for the category presented in the upper left corner of the computer screen and right button, e.g. keyboard key 'l', for category presented in the upper right corner of the computer screen. The actual categories that were presented switched between the different test blocks. In one test block, the categories agentic motive and "I like" were paired. Pairing meant that the two categories shared the same response key. This was done via instruction and by placing the two categories in the same side of the computer screen. In another test block, the pairing was switched, e.g. agentic motive was paired with "I don't like". Notice that due to the symmetric structure of the categories, when agentic motive was paired with "I like", affiliative motive was paired with the opposite "I don't like". Similarly when agentic motive was paired with "I don't like", affiliative motive was paired with the opposite "I like". The IAT effect was computed by taking the difference in average reaction time (in ms) between the pairing (e.g. agentic and I like) and the reverse pairing (e.g. agentic and I don't like). If participants have more positive evaluation towards the agentic category, we would find that participants were faster in the block with agentic/I like as compared to the block with agentic/I don't like. If participants have more positive evaluation towards the affiliative category, we would find the opposite result. In this experiment, the average reaction time of the agentic block (superiority/I like) was 806.22 ms (245.46 ms) and the average reaction time of the affiliative block (good relationship/I like) was 662.95 ms (147.78 ms). On average, the IAT effect (agentic – affiliative) was -143.27 ms (161.13 ms).

Error Rate. In addition to the IAT effect, the difference in error rate between the two pairing blocks was computed. Error rate refers to the average percentage of mistakes that the participants made when categorizing stimuli to the categories. In this experiment, participants made on average 9% categorization mistake within the agentic blocks (superiority/I like) and 5% categorization mistake within the affiliative blocks (good relationship/I like). On average, the error rate (agentic - affiliative) was -4%.

Outliers. Note that prior to the IAT effect calculation, reaction time below 300 ms and above individual far out values were excluded from the analysis. Far out values were calculated individually with value at $75\% + 3 \times \text{Interquartile Range}$ (value at $75\% - 25\%$). Only correct categorizations were included in the calculation. On average, 1.03 trials (less than 1%) were excluded per participant.

Experimental Manipulation

Decision mode was induced via instructions. The instructions were identical to Experiment 2 with the following phrases emphasized through all-capital letters: “SELBST ERLEBEN” (Self-Experienced) and “GEFÜHL” (Feelings) for the intuitive condition and “WAS ANDERE VON DIR DENKEN WÜRDEN” (What others think of you) and “WELCHE KONSEQUENZEN SICH DARAUS ERGEBEN” (Consequences that will occur) for the deliberative condition.

Decision Task

The content of the decision tasks (8 scenarios with 3 options each) was identical to Experiment 1. The procedure of the decision tasks was modified in the following way: The intuitive condition was altered to emphasize the influence of feelings, participants were asked to indicate their first impression/feeling for each option in the scenarios before making their decisions. After writing down the feeling word, the next option was presented to the participant. In the deliberative condition, participants did not write down their first impression and all three options were presented simultaneously on the same screen. As in the previous experiments, choices and ratings were calculated. The choice variable represents the average frequency of participants selecting the motive options. Reliability analysis on participants' choice indicated low consistency across the eight scenarios with $\alpha = .24$ for achievement options, $\alpha = .35$ for affiliation options and $\alpha = .23$ for power options. Means and standard deviation of choices of motive

options were as follow: $M = 3.03$ (1.49) for achievement, $M = 3.98$ (1.61) for affiliation and $M = 1.00$ (1.03) for power. The scale of rating of motive options followed that of Experiment 2. The rating variable of the deliberative condition represents the extent to which participants evaluate the option as positive or negative while rating of the intuitive condition represents the extent to which participants evaluate the option as inducing pleasant or unpleasant feelings. Reliability analyses on participants' ratings were satisfactory with $\alpha = .68$ for ratings of achievement options, $\alpha = .78$ for ratings of affiliation options and $\alpha = .60$ for ratings of power options. Means and standard deviation of ratings of motive options were as follow: $M = 4.98$ (.84) for achievement, $M = 5.32$ (.94) for affiliation and $M = 3.68$ (.89) for power.

Manipulation Check

Following the decision tasks, ten items of the manipulation checks were administered. These items were identical to experiments 1 and 2. The items were mean-aggregated. Reliability analyses indicated satisfactory values of $\alpha = .66$, $M = 3.91$ (.65) for a variable representing the extent to which participants decide intuitively, and $\alpha = .79$, $M = 3.14$ (.86) for a variable representing the extent to which participants decide deliberately.

2.4.2 Results

Manipulation check. One-way ANOVA on the manipulation check indicated that participants decided more deliberately in the deliberative condition, but not more intuitively in the intuitive condition. This pattern was similar to that of experiment 2.

Table 3.2 Mean Scores, Standard Deviation, and One-way ANOVA results on the Manipulation Checks across Intuitive and Deliberative Experimental Conditions

Post-Decision Questionnaire		
Manipulation Condition	How Intuitive were you?	How deliberative were you?
Intuitive	3.88 (.68)	2.83 (.85)
Deliberative	3.93 (.62)	3.46 (.76)
One-way ANOVA	$F(1,73) = .133, p > .10$	$F(1,73) = 9.21, p = .001$

Correlations. In this experiment, we did not find any correlations between personalized IAT and implicit motives (MMG) nor between personalized IAT and explicit motives (UMS). Meanwhile, implicit motive hope for success was highly correlated with all explicit motives: Hope for success, hope for affiliation and hope for control. Similarly, implicit hope for control was highly correlated with explicit hope for affiliation and explicit hope for control. Implicit hope for affiliation was not correlated with any of the explicit motives.

Table 3.3 Correlations between Implicit Motives (MMG), Explicit Motives (UMS) and pIAT

	MMG- HS	MMG- HA	MMG- HC	UMS- HS	UMS- HA	UMS- HC	IAT- RT	IAT- Error Rate
MMG -HS	-							
MMG -HA	.55**	-						
MMG -HC	.56**	.45**	-					
UMS -HS	.24*	.18	.13	-				
UMS -HA	.25*	.19	.26*	.29*	-			
UMS -HC	.25*	.16	.24*	.40**	.46**	-		
IAT -RT	.00	.05	-.03	-.06	-.06	.11	-	
IAT-Error Rate	.08	.16	.12	.10	.08	.06	.04	-

+ p < .10, * p < .05, ** p < .01 (two-tailed)

HS = Hope for Success, HA = Hope for Affiliation, HC = Hope for Control, RT = Reaction Time (in ms)

Regression Analysis with MMG and UMS

As in the previous study, in order to test differential relations between motives and choice behavior, the aggregated motive-choice scores for the decision scenarios were predicted by the implicit (MMG) and explicit motives, the intuitive vs. deliberative choice condition, and the interactions of motives and choice mode. Only the match conditions were presented in the main text. Analyses of the mismatch conditions are available in Appendix C. The moderated regression analyses were done separately for the motive-choice score and for the motive-ratings score. All predictor variables were centered before entering them into the regression and before computing the interaction terms. The results of these analyses are summarized in table 3.4

Table 3.4 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit (MMG) and explicit motives, condition. (deliberative vs. intuitive), and their interaction.

	Implicit Motive		Explicit Motive	
	Choices	Ratings	Choices	Ratings
Achievement – Hope for Success				
motive	.15	.37**	.16	.32*
condition ^a	-.02	-.04	-.00	-.00
motive x condition	.04	.30**	-.24 ⁺	-.08
R ²	.03	.20**	.05	.09 ⁺
Affiliation– Hope for Affiliation				
motive	-.02	.04	.30**	.52**
condition ^a	.05	-.04	.03	-.07
motive x condition	-.02	.04	-.09	-.05
R ²	.00	.01	.09	.27
Power– Hope for Power				
motive	.02	.22 ⁺	.23 ⁺	.35**
condition ^a	-.10	-.04	-.11	-.06
motive x condition	.10	.12	-.01	.01
R ²	.02	.07	.06	.13*

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Similar to the previous experiments, regardless of decision mode we found positive relations between the explicit achievement motive and ratings of achievement options, the explicit affiliation motive and choices and ratings of affiliation options and the explicit power motive and choices and ratings of power options. These findings indicated that the higher the explicit motives of the participants, the more likely it is for the participants to choose according to the strength of their explicit motives and to rate corresponding motive options more positively, regardless of whether decisions were made in the deliberative or the intuitive mode. Regardless of the decision mode, we also found a positive relation between implicit achievement motive and ratings of achievement option as well as between the implicit power motive and ratings of the power options. We did not find any relations between implicit affiliation motive and decisions on affiliation option. These relations mirror the correlations between implicit and explicit motives: Implicit achievement and power motives were highly correlated with their explicit motive

counterparts, while implicit affiliation motive did not correlate with explicit affiliation motive. These indicated that the predictive effects of motives to choices and to evaluations were due to the strength of explicit and not of implicit motives.

Apart from the main effects, we found a positive interaction between implicit achievement motive and manipulation condition indicating that implicit achievement motive predicted ratings of achievement option better in the deliberative as compared to the intuitive condition. This finding is the opposite of what we expected (Hypothesis 1) and is a replication of the pattern obtained in study 1. We also found a tendency of a negative interaction relation between explicit achievement motives and decision mode indicating that explicit achievement motives predicted choices of achievement options better in the intuitive as compared to the deliberative condition. This finding is the opposite of what we expected (Hypothesis 2).

Regression Analysis with Implicit Association Test

The IAT effect was entered into a regression as a predictor variable together with the manipulation condition and the interaction between the two. The same set of predictors was entered to predict choices and ratings of achievement, affiliation and power options. The results are summarized in table 3.5.

Neither main effects nor interaction effects were found with the IAT predicting choices and ratings of achievement and affiliation options. In power options, weakly significant main effect and interaction effect were found. A negative main effect ($b = -.22$) was found indicating that negative values of the IAT (positive evaluation of agency relative to communal motive) predicted higher choices of power options. A positive interaction effect ($b = .30$) was found indicating that the prediction of choices of power options by the IAT was stronger in the deliberative as compared to the intuitive condition. This result would be consistent with Hypothesis 2 if the IAT measured explicit, as opposed to implicit motives.

Table 3.5 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit motives (IAT effect), condition (deliberative vs. intuitive), and their interaction.

	Implicit Motive	
	Choices	Ratings
Achievement		
IAT Effect ^a	.18	.20
Condition ^b	.01	-.02
motive x condition	-.06	-.12
R ²	.03	.03
Affiliation		
IAT Effect ^a	-.03	.02
Condition ^b	-.05	-.16
motive x condition	-.14	-.19
R ²	.02	.02
Power		
IAT Effect ^a	-.22 ⁺	-.06
Condition ^b	.07	-.00
motive x condition	.30 ⁺	.08
R ²	.07	.01

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

^a IAT Effect = average reaction time (RT) of compatible block – average RT of incompatible block

Compatible block = Überlegenheit / Mag Ich, Incompatible block = Gute Beziehung / Mag Ich (German Version)

Compatible block = Superiority / I like, Incompatible block = Good Relationship / I don't like (English Version)

^b 1 = intuitive mode, 2 = deliberative mode

2.4.3 Discussion

In experiment 3, we found a positive interaction indicating that implicit hope for success predicted ratings of achievement options better in the deliberative as compared to the intuitive condition. We also found a negative weak significant interaction indicating that explicit hope for success predicted choices of achievement option better in the intuitive as compared to the deliberative condition. In short, we found evidence against both of our hypotheses (Hypothesis 1 and 2).

In this experiment, an interaction favoring the deliberative mode was found on ratings of options while an interaction favoring the intuitive mode was found on choices of options. Thus, it is possible that the form of responses (ratings or choices) interacted with the decision mode and with the implicit/explicit motives. Since this was the first study in which this pattern emerged and since it was obtained only for the achievement motive, this interpretation should be taken with caution.

With regards to the IAT, the absence of correlations with the multi-motive grid and the unified motives score left us with little clues as to whether the IAT had successfully measured implicit or explicit motives. In addition, the average IAT score was overwhelmingly negative (-149.75 ms) indicating that on average the pairing of affiliative motive and liking was much stronger than the pairing of agency motive and liking. This result might be due to the use of the word ‘Superiority’ which may have a negative connotation. Even when some people feel superior, it is unadvisable to express their feelings openly. Internalization of what is socially desirable might have played a role in the IAT result.

2.5 Experiment 4

Experiment 4 aimed to test the main hypotheses while handling various issues found in the previous experiments by:

(1) Further strengthening the validity of the intuitive manipulation through (a) asking participants to imagine themselves performing the activity described by the motive options and (b) asking participants to confirm whether they felt certain motive related feelings (e.g. powerful, excited, joyful) with regards to the imagined activity; by asking participants about their feelings we hoped to prime participants to consider primarily feelings while reading the scenarios.

(2) Distinguishing between choices and ratings through procedural modifications such as presenting choices and ratings in separate blocks.

(3) Solving measurement issues of the assessment of implicit motives by utilizing the Picture Story Exercise (PSE) and a modified Implicit Association Test (IAT) as measures of implicit motives.

And (4) Increasing statistical power by focusing only on the intuitive decision mode.

On the basis of findings reported in Exp. 3, we would tentatively expect PSE and IAT scores to be predictive of choices and less so of ratings, while the explicit motive questionnaire, Unified Motive Scale (UMS), should be predictive of ratings and less so of choices. As the experiment was restricted to the intuitive condition, we expected the relation between implicit motives and decisions to be stronger than the relation between explicit motives and decisions.

2.5.1 Method

Participants

Sixty-seven students (54% female, mean age = 22.79) of the Friedrich-Schiller-University Jena were recruited for the study (10th and 11th of June 2014). Participation was rewarded with €4.

Procedure and materials⁵

First, implicit motives were assessed with the Picture Story Exercise (PSE; McClelland et al., 1989). Immediately after the PSE, participants were given intuitive instructions and performed the decision tasks. As PSE consists of an imagination exercise, we hoped that completing the decision tasks after the PSE would make it easier for participants to imagine the activities described in the motive options. Following the decision task, participants completed the explicit motive measure (UMS) and the Implicit Association Test (IAT).

Picture Story Exercise (*McClelland, Atkinson, Clark & Lowell, 1953; Winter, 1994; Schultheiss & Pang, 2007*). The Picture Story Exercise (PSE) is a projective measure in which participants write imaginative stories in response to a set of pictures. The PSE is the most prominent measure of implicit motives and is deemed the gold standard for the assessment of implicit motives. The PSE materials consist of eight pictures depicting: Women in a Laboratory, Ship Captain, Couple by the River, Trapeze Artist, Nightclub Scene, Bicycle Race, A Boxer and Friends in a Café. The procedure of the PSE is as followed (*Schultheiss & Pang, 2007*): Each picture was presented on a computer screen with black background for 10 seconds. It was then replaced by a screen of writing instructions. Participants were instructed to write imaginative stories with regard to the picture they have just seen by typing directly into a window on the screen, with the guiding questions appearing above the writing window. Guiding questions were questions such as: What happened? What are the people thinking and feeling? What do the people want to do?. After 4 minutes had passed, the writing task exited automatically and the next picture was presented. Participants must remain in the writing task for a minimum of 3 min. Four trained coders coded the resulting stories following the Winter (1994) manual. Across the four coders the average interclass correlation coefficients (ICC) indicating interrater agreement were .94 for the achievement motive, .97 for the affiliation motive and .89 for the power motive. Mean scores were 7.55 (3.48) for achievement motive, 10.49 (3.97) for affiliation motive and 7.00 (4.00) for power motive.

Unified Motive Scale (*Schönbrodt & Gerstenberg, 2012*). Explicit motive was measured using the Unified Motive Scale questionnaire (UMS) identical to the previous experiments. Only

⁵ See Appendix G for the complete material set of Experiment 4.

hope component of the motives were measured. Reliability analyses indicated satisfactory value with $\alpha = .84$, $M = 4.93$ (.90) for Hope for Success, $\alpha = .89$, $M = 4.77$ (1.14) for Hope for Affiliation and $\alpha = .90$, $M = 3.74$ (1.19) for Hope for Control.

Recoding-Association-Labeling Implicit Association Test (ReAL-IAT) (*Meissner & Rothermund, 2013*). The ReAL model was used as an alternative measurement of the implicit motives. The ReAL model is an analysis tool that allows a separate estimation of the strength/probability of different processes within the IAT. Using a multinomial processing tree model (Erdfelder et al., 2009), separate parameters (recoding, labelling, and associations for the two target categories) were estimated for each participants.

Procedure. Since such a multinomial analysis of an IAT is based entirely on the pattern of correct and erroneous responses and ignores reaction time (RT), it requires a large percentage of errors and the procedure of the IAT has to be slightly modified in order to allow for a reliable estimation of parameters. The modified procedure used multiple pairs of blocks with adjustable response deadline. Participants were first given a response deadline of 750 ms. If participants made few errors (< 5% or 5-15% or 15-30%), the response deadline was shorten (-150 ms or -100 ms or -50 ms). If participants made many errors (30-45% or > 45%), the response deadline was prolonged (+50 ms or +100 ms).

Materials. Materials of the IAT were as follows: As target categories, agency and communal motives were labelled 'Achievement and Power' (Leistung und Kraft) and 'Relationship and Sympathy' (Beziehung und Sympathie). Target stimuli were pictures depicting attainment of achievement, affiliation and power motives similar to Experiment 3. As attribute categories, wanting was labelled 'I want' (Ich will) and 'I don't want' (Ich will nicht). Wanting is deemed to be closer to the nature of implicit motives as compared to liking. While liking might entail a conscious valuation of objects, wanting came from needs and desires. Hence wanting as compared to liking is a more suitable assessment tool for the implicit motives. Stimuli for the wanting category were words depicting positive feelings such as 'happiness' and 'love' and words depicting negative feelings such as 'desperation' and 'frustration'.

Correlations.

Table 4.1 Correlations between Picture Story Exercise (PSE), Explicit Motives (UMS) and Parameters of the ReAL-IAT (Recoding and Associations).

	PSE-HS	PSE-HA	PSE- HC	UMS-HS	UMS-HA	UMS-HC	IAT-A1	IAT-A2
PSE -HS	-							
PSE -HA	.20	-						
PSE -HC	-.20	-.33**	-					
UMS -HS	.11	.07	-.18	-				
UMS -HA	.05	.21	-.18	.32**	-			
UMS -HC	.19	.17	-.26*	.44**	.23	-		
IAT -A1	-.03	.06	-.06	.11	.05	.26*	-	
IAT -A2	.03	.06	-.06	.04	.05	-.14	-.38**	-
IAT -Re	-.09	-.10	-.00	.02	.00	.14	.20	-.19

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

HS = Hope for Success, HA = Hope for Affiliation, HC = Hope for Control

A1 = Beziehung und Sympathie (Relationship and Sympathy)

A2 = Leistung und Kraft (Achievement and Power)

Re = negative value indicates recoding in the direction of achievement and power while positive value indicates recoding in the direction of relationship and sympathy

As can be seen from Table 4.1, implicit motives measured by PSE and explicit motives measured by UMS are uncorrelated except for hope for control dimension in which the correlation is in the negative direction ($r = -.26$). IAT parameters are similarly uncorrelated with implicit motives measured by PSE and explicit motives measured by UMS except for hope for control dimension in which IAT parameter for Relationship and Sympathy is positively correlated with UMS hope for control ($r = .26$).

Experimental Manipulation

In this experiment, only the intuitive condition was administered to increase the number of observations within the intuitive condition. Intuitive instructions were identical to experiment 3.

Decision Tasks

The content of the decision task was identical to the previous experiments. The procedure of the decision task was modified in the following way: (1) For each option, participants were asked whether they feel the corresponding motive-feeling, e.g. powerful, excited or joyful and (2) whether they would like to perform the activity specified (variable ‘Choice’). As compared to the previous experiments, procedure of choosing an option was modified in two manners: (a) Motive options were presented sequentially as opposed to simultaneously to reduce the likelihood that participants were making direct comparisons between choices (evaluating and comparing the merits of these choices probably enhances deliberation, which would be the opposite of the intended manipulation), (b) it is now possible to choose multiple options as opposed to choosing only one out of the three options. In this way, participants high in two motives could respond ‘yes’ to both options instead of being forced to choose either one. (3) To further reduce the likelihood of deliberation, rating of options was placed in a separate block after the participants made their choice on all the possible activities.

Reliability analyses indicated low consistency of choices across the eight scenarios with $\alpha = .33$, $M = 5.58$ (1.51) for choosing achievement options, $\alpha = .60$, $M = 5.66$ (1.84) for choosing affiliation options and $\alpha = .27$, $M = 3.78$ (1.57) for choosing power options. We found higher consistency of ratings compared to choices across the eight scenarios with $\alpha = .50$, $M = 4.77$ (.81) for ratings of achievement options, $\alpha = .78$, $M = 5.10$ (1.09) for ratings of affiliation options, and $\alpha = .60$, $M = 3.56$ (.83) for ratings of power options.

2.5.2 Results

Main Effects of Implicit and Explicit motives

In order to estimate the effect of implicit and explicit motives on choices and ratings, simple regressions were conducted with either implicit or explicit motives predicting choices and ratings on the matched motives. The results were summarized in table 4.2. Regressions on mismatch motives were summarized in Appendix C.

Table 4.2 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit (PSE) and explicit motives (UMS).

	Implicit Motive (N = 67)		Explicit Motive (N=67)	
	Choices	Ratings	Choices	Ratings
Achievement				
Motive	.16	.07	.20	.39**
R ²	.03	.01	.04	.15**
Affiliation				
Motive	.18	.13	.53**	.68**
R ²	.03	.02	.28**	.46**
Power				
Motive	-.10	-.20	.25*	.47**
R ²	.01	.04	.05*	.23**

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

As can be seen from Table 4.2, explicit motives strongly predicted ratings of all motives. Explicit motives also significantly predicted choices of affiliation and power options though with less amount of variance explained. Implicit motives did not predict choices or ratings of any of the motive options.

Table 4.3 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit motive (PSE) after outliers were excluded.

	Implicit Motive	
	Choices	Ratings
Achievement (N = 45)		
motive	.19	.31*
R ²	.04	.10*
Affiliation (N = 48)		
Motive	.23	.18
R ²	.05	.03
Power (N = 42)		
Motive	-.21	-.25 ⁺
R ²	.04	.06 ⁺

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

Table 4.3 summarizes the results of the simple regressions for the implicit motives after outliers were excluded. Outliers were cases with PSE score variance (across the four coders) larger than the mean of the PSE score variance plus two times their standard deviation. Excluding outliers from the analyses resulted in a significant positive relation between implicit achievement motive

and ratings of achievement options as well as weak significant negative relation between implicit power motive and ratings of power options. In all three motives however, more than 30% of the data had to be removed as outliers. Furthermore when implicit and explicit motives were entered simultaneously on data without outliers, the significant effects of implicit motives disappeared and only the explicit motives were significant (see table 4.4).

Table 4.4 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit and explicit motives after outliers were removed.

	Choices	Ratings
Achievement Option (N = 45)		
Implicit Motive	.14	.25 ⁺
Explicit Motive	.18	.22
R ²	.07	.14*
Affiliation Option (N = 48)		
Implicit Motive	.09	.00
Explicit Motive	.58**	.75**
R ²	.37**	.56**
Power Option (N = 42)		
Implicit Motive	-.13	-.14
Explicit Motive	.34*	.52**
R ²	.15*	.33**

+ p < .10, * p < .05, ** p < .01 (two-tailed)

ReAL-IAT

We now looked into the results of the ReAL-IAT. Table 4.8 summarized the regression results with association parameter for agency motive, association parameter for affiliative motive and recoding parameter entered simultaneously to predict choices and ratings of achievement, affiliation and power options.

Table 4.5 Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding ReAL-IAT associations and recoding parameters.

	Choices	Ratings
Achievement		
Association Parameter 1 (A1)	-.14	.11
Association Parameter 2 (A2)	.07	.02
Probability of Recoding (Re)	.10	.03
R ²	.03	.01
Affiliation		
Association Parameter 1 (A1)	.06	.13
Association Parameter 2 (A2)	.10	.16
Probability of Recoding (Re)	.19	.08
R ²	.05	.03
Power		
Association Parameter 1 (A1)	-.09	.20
Association Parameter 2 (A2)	-.01	.18
Probability of Recoding (Re)	.20	.33**
R ²	.05	.15*

+ p < .10, * p < .05, ** p < .01 (two-tailed)

A1 = Beziehung und Sympathie (Relationship and Sympathy)

A2 = Leistung und Kraft (Achievement and Power)

Re = negative value indicates recoding in the direction of achievement and power while positive value indicates recoding in the direction of relationship and sympathy

Association Parameter of the ReAL-IAT did not predict choices or ratings of motives options across all motives. Recoding parameter, on the other hand, significantly predicted ratings of power options. This finding mirrored that of experiment 3 in which the IAT score predicted choices of power options. Results of Experiment 4 indicated that this contribution came from the recoding process of the IAT, as opposed to the association process. As recoding is a strategic process, it is more akin to the explicit as opposed to the implicit motives. We again find that the explicit motives predicted choices and ratings of power options, but not the implicit motives.

2.5.3 Discussions

Despite our best attempt to find relations between implicit motives and decisions, the results of Experiment 4 indicated that it is the explicit motives that exerted influence on the decisions of motive options. Strengthening the intuitive manipulation by imagination exercise did not change

the resulting pattern. Distinguishing between choices and ratings did not result in differential predictions; of implicit motives predicting choices and explicit motives predicting ratings. Instead, we found that explicit motives predicted both choices and ratings, but predictions of ratings were stronger than predictions of choices. PSE measure seems to behave similarly to MMG measure. Regressions on the complete data set showed that PSE measure did not predict decisions at all. Regressions on data without outliers showed that PSE measure positively predicting ratings of achievement options and negatively predicting ratings of power options. When explicit motives were entered simultaneously as predictor variable, the effect of PSE disappeared. This indicates that the PSE did not add a unique contribution to the explained variance of the decisions over and above the explicit motives. The ReAL-IAT similarly indicated that the significant effect found between recoding parameter and power option is more supportive of explicit motives predicting decisions as opposed to implicit motives predicting decisions. Lastly, the exclusive intuitive condition did not change, and even enhanced, the finding that explicit but not implicit motives predicted decisions.

2.6 Joint Analysis: Meta-Analysis across Studies

The results across the four experiments were unclear and inconclusive. No robust or consistent pattern was found across the four studies despite the highly similar structure of the experiments. We could nevertheless capitalize on these highly similar structures and the data across the experiments will now be subjected to a joint analysis.

As indicator for implicit motives, only the MMG and only the hope scales of the MMG will be included in the analysis. This is because MMG was the only implicit measure that was consistently assessed across studies. As such, studies that did not include MMG, namely the pilot study and experiment 4, will be excluded from the joint analysis.

As indicator for the explicit motive, the Unified Motives Scales will be used and as a moderator the manipulation of intuitive and deliberative decision mode will be used.

The effect size of the joint analysis is the Pearson's correlation between implicit/explicit motives and choices/ratings of the matched motives in the respective intuitive and deliberative condition⁶.

In order to compute the average score, correlations were transformed into Fisher z-scale before averaging and then back-transformed into the Pearson's correlation. The transformation from sample correlation r to Fisher's z is given by

$$z = 0.5 \times \ln\left(\frac{1+r}{1-r}\right).$$

The variance of z (to an excellent approximation)⁷ is (for $i = \text{exp1}, \text{exp2}, \text{exp3}$)

$$V_i = \frac{1}{n_i - 3}.$$

Weight is then calculated by

$$W_i = \frac{1}{V_i}.$$

Thus average score is calculated by

$$M = \frac{\sum W_i Z_i}{\sum W_i}.$$

Finally, a Z-value to test the null hypothesis that the mean effect μ is zero could be computed by

$$Z_{score} = \frac{M}{SE_Z},$$

in which standard error is denoted by

$$SE_Z = \sqrt{V_Z}.$$

Two-tailed test for p -value is given by

$$p = 2 [1 - (\Phi(|Z|))],$$

where $\Phi(Z)$ is the standard normal cumulative distribution.

Back transformation of the mean value from Fischer's z to correlation r is given by

$$r = \frac{e^{(2 \times M)} - 1}{e^{(2 \times M)} + 1}.$$

⁶ See Appendix H for all correlations.

⁷ See Borenstein et al. (2009). Introduction to Meta-Analysis. Chapter 6.

The procedure⁸ for averaging correlations across the three studies as well as the respective two-tailed test was repeated for implicit and explicit motives in the intuitive and the deliberative condition for choices and ratings of the respected matched motives. The results were summarized in table 5.1.

Table 5.1 Mean effect size (Pearson's correlation) across three experiments on the corresponding implicit and explicit motives and choices and ratings of motives options.

	Intuitive Condition		Deliberative Condition	
	Choices	Ratings	Choices	Ratings
Achievement				
Implicit Motive	.07	-.00	.23 ⁺	-.05
Explicit Motive	.16	.33**	.41**	.27**
Affiliation				
Implicit Motive	-.02	.01	-.06	-.01
Explicit Motive	.29**	.30**	.25*	.45**
Power				
Implicit Motive	-.09	.16	.04	.36**
Explicit Motive	.25*	.47**	.26**	.46**

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

In sum, the results across experiment 1, 2 and 3 are: (1) Explicit motives predict decisions for all motives regardless of decision mode. Effects are somewhat stronger for ratings than for choices. For affiliation motive, the relation between explicit motives and ratings was somewhat stronger in the deliberative mode. (2) Implicit motives did not predict any decisions with two unexpected exceptions: They predicted ratings in the deliberative mode for the power motive and they predicted choices in the deliberative mode for the achievement motives.

Table 5.2 Average correlation of explicit and implicit motives on matched and mismatched motives across three experiments collapsing across decision modes, motive types and choices/ratings.

	Matched	Mismatched
Explicit Motive	.32 ⁺	.05
Implicit Motive	.06	.05

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

⁸ Using fixed effect or random (mixed) effect model did not change the results because in all cases τ_2 denoting between-study variance is close or equal to zero.

As can be seen from table 4.2, only the average correlation of explicit motives and decisions in the matched condition was significantly different from zero ($r = .32$).

The results of the joint-analysis across experiment 1, 2, and 3 mirrored that of experiment 4 in which explicit motives predict decisions and implicit motives do not, regardless of decision mode across achievement, affiliation and power motives.

One explanation for the unexpected correlations between implicit motives and decisions in the deliberative mode is that the implicit motives as measured by the Multi-Motive Grid share some variance with the explicit motives and that this shared variance predicted the decisions in the deliberative mode. This was also evident in the fact that in our studies, implicit and explicit motives sometimes significantly correlate.

3 General Discussions

Throughout four experiments, the dissertation empirically tested the hypotheses that 1) implicit motives provide sources for intuitive decisions and 2) explicit motives provide sources for deliberative decisions. Due to scattered results, a joint-analysis was conducted. The results of the joint-analysis showed that explicit motives predicted decisions regardless of intuitive or deliberative mode. On the other hand, regardless of the decision mode, implicit motives did not predict decisions.

The fact that no support was found for our first hypothesis could be due to: 1) we did not measure implicit motives properly, 2) we did not appropriately assess intuition or 3) implicit motives do not provide content for intuitive decisions. The general discussion will examine these issues in three corresponding sections. Recommendations for future research will be presented accordingly.

3.1 Measurement Issue of Implicit Motive

The methods for measuring implicit motives were the Multi-Motive Grid, the Implicit Association Test and the Picture Story Exercise. These methods will be discussed in the following three subsections.

3.1.1 Multi-Motive Grid

As has been previously touched upon, the semi-projective measure, the Multi-Motive Grid, may not capture the implicit motives as theorized. Much of the research completed within the implicit motive literature has relied on the full-projective measure namely the Thematic Apperception Test (TAT) and its modern variant, the Picture Story Exercise (PSE). Prominent scholars in the field, for example, Pang and Schultheiss (2005) and Schultheiss and Brunstein (2001) continued to use the PSE as their main measurement of implicit motives. Köllner and Schultheiss (2014) in

their recent meta-analysis explicitly categorized the Multi Motive Grid as a “self-report measure” and further excluded all studies using the MMG in their implicit motives meta-analysis. A study by Schüler, Brandstätter, Weger, and Baumann (2015) reported a significant but low correlation between the MMG and the PSE ($r = .14$). The popularity of the Multi-Motive Grid however is apparent and understandable due to its economical nature of being less labor-intensive. Recent publications from various researchers routinely used the Multi-Motive Grid as their measurement of implicit motives and found that the implicit motives measured with MMG behaved as predicted (e.g. Schüler, Brandstätter & Sheldon, 2013; Bilsky & Schwartz, 2008; Langens, 2007; Kehr, 2004; Lawrence & Jordan, 2009). As such, the true merit of the Multi-Motive Grid measurement continues to be debated.

Across our experiments, we found that the Multi-Motive Grid *sometimes* correlates with our explicit motives measure⁹. However, these correlations were relatively low and were only found within the power or the achievement motive. Overall it is clear that the Multi-Motive Grid behaves differently from explicit motives. While explicit motives strongly predicted decisions, the MMG did not predict decisions except for cases in which they were correlated with explicit motives in achievement and power motives. Our experiments could not determine whether or not the MMG truly measures implicit motives. If forced to conclude the Multi-Motive Grid is what it claimed to be: a *semi*-projective measure.

In conclusion, due to some uncertainties on the use of the Multi-Motive Grid as an implicit motive measure, it is possible that we did not find correlations between implicit motives and intuitive decisions because we used the Multi-Motive Grid as our main measure of implicit motives. Note that the MMG was the implicit motive measure of the joint-analysis. Alternative measures of the implicit motive were not included in the joint-analysis because they were not consistently used throughout the experiments.

⁹ In experiment 1, MMG hope for control was correlated with UMS hope for control ($r = .31$), in experiment 2, MMG and UMS were not correlated and in experiment 3, MMG hope for success was correlated with UMS hope for success ($r = .24$), UMS hope for affiliation ($r = .25$) & UMS hope for control ($r = .25$).

3.1.2 Implicit Association Test

Even though it was not consistently available, the Implicit Association Test was administered as an alternative measure of implicit motives in Experiments 3 and 4.

The merit of the IAT as a measurement of implicit attitudes was discussed elsewhere (Greenwald et al., 2009). The IAT was originally meant to measure implicit attitudes; however, several attempts have been made to apply the IAT to implicit motives (see Slabbinck et al., 2013). One disadvantage of previous attempts is that each implicit motive (achievement, power, and affiliation) was measured with separate IATs. Each IAT takes considerable time to complete (± 15 minutes) and is quite taxing for the participants. Thus, it would have been ideal to have a single-IAT test that measures all three motives at once. We implemented this by grouping the motives into two categories: Achievement and power as agency motive and affiliation as communal motive. In addition, we took notice of previous attempts and used pictorial as opposed to verbal materials as stimuli for these target categories. Further modifications were implemented to make the test more suitable for an assessment of implicit motives. These modifications took the form of a personalized-IAT for Experiment 3 and a ReAL-IAT for Experiment 4. They will now be discussed in turn.

Personalized-IAT

Among several variants of the IAT, the personalized IAT is said to reduce the contamination of extrapersonal associations within the IAT (Olson & Fazio, 2004). Extrapersonal associations are associations that come from external sources such as norms and stereotypes as opposed to attitudes that were formed through personal experiences. Implicit motives are personal and refer to the desire of the participants to achieve the particular motive independent of norms or external incentives. As such, the personalized IAT is more suitable than the standard IAT to measure implicit motives. In a nutshell, the difference between standard IAT and personalized IAT is the attribute stimuli could be categorized according to the preference of the participants in the personalized IAT

In Experiment 3, the personalized IAT (IAT effect) weakly correlated with choices for the power motive regardless of the decision mode. The faster participants categorized agency motive stimuli when paired with the category ‘I like’, the more likely it was that they selected the power option. In Experiment 3, the reaction time and the accuracy measure of the IAT (error rate) did not correlate with either the MMG or the UMS.

ReAL-IAT

The absence of predictive relations between the IAT and the choices and ratings of achievement and affiliation motives led us to further improve the IAT measure by utilizing a recently developed analysis tool, namely the ReAL-IAT (Meissner & Rothermund, 2013). The ReAL model allows for separate estimations of the recoding and association processes within the IAT. While the IAT is meant to measure implicit associations, a more strategic process is also possible within the IAT. The strategic process is labelled recoding because a possible process within the IAT is participants *recode* the categories of the IAT. For example, as opposed to categorizing disliked stimuli and exemplars representing the agency motive to their respective categories, participants might categorize both stimuli to a single superordinate category (e.g., ‘negative’ or ‘effortful’). Eliminating the instructed categories during the task will undermine the assessment of the associations’ strength towards the intended target’s category. Employing the ReAL model allows a separation of association and recoding processes and thus helps to calculate a pure measure of associative strength for each of the target categories.

In addition to the use of the ReAL-IAT, the attribute categories were changed from liking (exp. 3) to wanting (exp. 4). Wanting is deemed more appropriate for the implicit motives as wanting pertains to needs and desires while liking pertains to evaluations (for a critical evaluation of wanting IATs, see Tibboel et al., 2011, in press).

In experiment 4, the association parameters of the ReAL-IAT did not correlate with the PSE and did not predict choices and ratings of the motive options. Interestingly, the association parameter of the communal motive correlated positively with the explicit motive scale for hope for control (UMS). The recoding parameter of the ReAL-IAT did not correlate with the PSE and the UMS

but significantly predicted ratings of the power options. The more participant recoded the categories paired with 'I want', the higher the power options were evaluated.

Summary and Future Outlook

Results from experiment 3 and 4 combined indicated that more work needs to be done to develop a variant of the IAT that is capable of assessing implicit motives. The personalized IAT indicated some success with regards to the power motive options independent of the decision mode. It is unclear whether the predictive relation between the IAT and the power options was due to the IAT measuring the implicit or the explicit motives. The ReAL-IAT seems to support the conclusion that the IATs predictive effect is due to explicit motive components as it was entirely due to the recoding parameter as opposed to the association parameter. If the current IAT is more likely to measure explicit motives as opposed to implicit, perhaps making the task less evaluative and more need- or desire- oriented is more desirable. In other words, instead of evaluation or liking, the IAT should measure desire or wanting. Apparently, just exchanging the attribute labels from “liking” to “wanting” does not change the basic nature of the task – it is highly likely that participants will recode the attributes in terms of valence (see Tibboel et al., 2011, in press).

In a recently developed new variant of a Wanting-IAT, Koranyi et al. (2016) induced a strong motive to drink before the IAT by having participants consume a large amount of salty crackers, and then attached motive-related consequences to one of the attribute categories of the IAT: Categorizing beverages stimuli to the wanting response was accompanied with a gurgling sound and led to amount of water at the end of the experiment. In their experiment, Koranyi et al. (2016) showed that the wanting-IAT exhibit differences between desired and undesired stimuli that were not visible in a standard liking IAT.

Conceptually implicit motives are closer to wanting and desiring than liking. Thus a wanting-IAT would be more suitable to assess implicit motives than the standard liking IAT. In a preliminary unpublished study (Kattlun, 2015), it was shown that a Wanting-IAT, using agency and communal motives as target categories, correlates with explicit measures of motives. This

indicates that even though the IAT is a promising venue there might be a conceptual problem of using the IAT as measurement of implicit motives¹⁰.

3.1.3 Picture Story Exercise

The golden standard of the implicit motive measurement is the picture story exercise (PSE). As mentioned, the Thematic Apperception Test and the current variant of it, the PSE, was the measurement of implicit motives that was used to validate key important features of implicit and explicit motives as captured in McClelland (1989) and Schultheiss and Brunstein (2010).

In Experiment 4, we utilized the PSE as our measurement of implicit motive. Procedure of the PSE followed that of Schultheiss and Pang (2007) and coding was done by four trained coders following the Winter (1994) manual. Across the four coders, inter rater agreements were highly satisfactory as indicated by high intraclass correlation coefficient scores of .94 for achievement, .97 for affiliation and .89 for power motives. In this experiment, we did not find a predictive relation between the PSE and intuitive decisions of motive options. This indicates that perhaps the crucial problem lies beyond the measurement of implicit motive. Even when the current best practice of implicit motive measurement was used, we did not find evidence for our hypothesis. Alternatively, the assessed decisions were not intuitive.

3.2 Distinction between Intuitive and Deliberative Decisions

Previously, we have discussed the measurement issue with regards to assessment of implicit motives. The absence of evidence for our hypothesis, however, could be due to the fact that we did not properly assess intuition. While basic distinction of intuitive and deliberative may be clear (intuitive decisions are spontaneous and impulsive while deliberative decisions are explicit and conscious), the processes involved are less clear. In the following subsections we will discuss three points in turn: (a) when exactly the intuitive mode of decision making becomes activated, (b) what conditions and variables determine which process will be dominant and (c)

¹⁰ E.g., pertaining to the distinction between hot and cold affective states (see Blaison et al., 2011)

the motivational sources that influence and drive the process. Alongside each component, implications for future studies will be presented.

3.2.1 When is intuitive mode activated?

Intuitive mode can be activated when deliberation is overwhelmed. Betsch and Glöckner (2010) presented participants with a large amount of running information alongside distracting stimuli and demonstrated that intuition is capable of integrating a large amount of information. In our study decisions were made in each scenario. This allowed participants to treat each scenario as separate decision task. Each scenario dealt with only three options which were well within the range of working memory and thus deliberation could handle the task without any problem. This could be the reason why we did not find the intended effect within our study. For future studies, it would be interesting to present large amount of motive-related information to see if intuition could better detect these motives' features. Motives information on different activities should be presented in a random order by interspersing achievement, affiliation and power information. This mirrors the real life in which information is often obtained via different sources at various time intervals. Similar to Betsch and Glöckner idea, the influence of intuitive process on motive-congruent decisions could manifest in the form of affinity due to intuition retaining higher average count of specific motive information.

Intuitive mode can be activated when highly relevant information is present. To illustrate, receiving unfair treatment may lead to immediate feelings of anger which lead to a spontaneous decision of enacting revenge. Highly relevant information could be those that are emotionally-laden (e.g. anger, being in love), vivid (e.g. shark attacks or plane crash), or recent (e.g. availability heuristic). In our study decisions were not emotionally-laden nor were they striking or vivid. This could be the reason why we did not find the intended effect. Future studies should examine the influence of motives in a context that is relevant for the intuitive mode. Moral judgment is one such context. It is an appropriate context because (a) moral judgment is often emotionally-laden, (b) intuitive and deliberative moral judgments often conflict and (c) there are striking similarities between moral foundations of fairness, care and authority and achievement, affiliation and power (Haidt, 2001).

3.2.2 When activated which conditions determine which process affect behavior?

In general, there is a lack of developed theory on the necessary and sufficient conditions that determine whether intuitive or deliberative process determines behaviours. Three determining variables have been proposed: (a) experience, (b) availability of resources and (c) the decision makers' own preference.

With regards to experience, the more familiar the decision context, the more likely it is for intuitive process to take over. To illustrate, many automatic activities (e.g. driving) began as a deliberate process of step-by-step learning. After sufficient amount of repetitions, behaviours become spontaneous. In other words, intuitive processes determine those behaviours that have undergone implicit learning (learning by doing) (Hogarth, 2001).

The second proposal pertains to the availability of resources. Under stress, individuals might react intuitively whereas with enough cognitive resources they would realize they should have behaved deliberately. In lab experiments, availability of resources is manipulated via time pressure by providing a strict time limit on a task or via cognitive load by occupying participants' working memory while working on a task. In these two conditions resource capacity is reduced and intuitive processes are assumed to be dominant. In some cases, however, when the stakes are high, stress condition inhibits spontaneous process, namely when one 'chokes under pressure' (Baumeister, 1984).

Lastly, intuitive and deliberative decisions might become dominant because of decision makers' own preference (Betsch, 2004). Individuals valuing intuition are more likely to follow their intuitive decisions while individuals valuing deliberation are more likely to follow their deliberative decisions. The antecedents of these preferences might have been individuals' value system (Schwartz, 1992), their Big 5 personality (Costa and McCrae, 1992) or their risk attitude (risk averse or risk loving; Tversky and Kahneman, 1992).

3.2.3 Which motivational sources influence and drive which process?

According to Strack and Deutsch's Reflective and Impulsive Model (RIM), intuitive processes belong to the impulsive system and deliberative processes belong to the reflective system. While the impulsive system has a passive role of providing content during decisions, the reflective system is in charge of decision making. In the case of a dominant impulsive system, the reflective system simply translates the response of the intuitive system into decisions. When this is not the case, the reflective system takes control of decisions. As such the explicit motive has advantage because it is already located in the decision making system. In other words, the threshold necessary for implicit motives to influence decisions is higher than the threshold for explicit motives. Hence, only experiments that give relatively large advantage to the implicit motives will witness its influence on decisions. This dissertation did not give the appropriate advantage and as such no support was found for the hypothesis. One implementation to give implicit motives an advantage is to take only those participants that are high in implicit motives but are low in the corresponding explicit motives.

Finally according to our hypotheses, intuitive decisions draw their content from implicit motives and deliberative decisions draw their content from explicit motives.

3.3 Do Implicit Motives Predict Decisions?

The previous sections focused on measurement issues regarding the assessment of implicit motives and on the distinction between intuitive and deliberative decisions. But perhaps the reason implicit motives do not drive intuitive decisions is because implicit motives do not influence decisions at all. According to the dual-motive theory of McClelland, implicit motives affect only spontaneous behavior --not controlled behavior. Perhaps decision, because it is made consciously, is by its very nature a form of controlled or strategic behavior. As such, if we accept that intuitive decisions are controlled even when the reasons behind the decisions remain (at least partly) unknown, our results would be consistent with the dual-motive theory. That is, implicit

motives do not have an influence in the domain of controlled behavior, in our case the decision-making domain.

The implicit motives literature with its impressive empirical work, including decades-long longitudinal studies, has never clearly specified the mechanisms in which implicit motives function. At best, an array of correlations was found at both the biological (hormones) and the cognitive (attention, memory) level¹¹. The causal direction between the correlates and the motives as well as the mechanisms linking motives and behaviors are still a mystery. One possible mechanism in which implicit motives impart their influence on behavior is via implicit self-regulation. Goals that are congruent with motives allow individuals to draw more motivational resources because enjoyment of an activity reduces self-control cost (Müller, 2015). The ease provided by implicit self-regulation increases the chance that the individuals will reach their goals and goal attainment in turn provides positive feedback that satisfies implicit motives which adds more enjoyment and motivation for individuals to further pursue the congruent goals. Due to this we discovered the robust longitudinal effect between achievement and academic success, affiliation and marriage satisfaction and between power and managerial success. A comprehensive study of these dynamic relations as such, however, is rare within the implicit motive literature.

This study is one of the few that attempted to categorize mechanisms that could possibly bridge the gap between motives and behaviors, namely that an intuitive mode via feelings transfers the influence of implicit motives to decisions, whereas a deliberative mode transfers the influence of explicit motives to decisions (decisions in turn determine behavior). While no evidence supporting this moderation has been found, it might be too early to do away with the hypotheses altogether. There are several ways to proceed: 1) the influence of intuitive process may manifest itself when behavior is less controlled or 2) Implementations of the intuitive mode could have been modified as section 2.3 indicated.

The problem with decisions was that they might have been clearly controlled. Another behavioral indicator that is influenced by spontaneous and controlled process alike is time spent on a task or persistence. Participants may persist on a task because they explicitly value the

¹¹ See Stanton & Schultheiss (2009) for hormonal correlates of (power) motives and Schultheiss & Hale (2007) for implicit motives modulation of attentional orienting.

outcome of the task or because they feel attracted to perform the task. In other words, persistence may be decided deliberately due to the evaluation of the value of the task or intuitively due to the desirability of the task. The task itself could be achievement, affiliation or power oriented. In this manner, it would be possible to test whether persistence on a specific motive related task depends on whether the intuitive or the deliberative process was stronger.

Alternatively, motives content could be attached to products such as movies or objects symbolizing achievement, affiliation or power motives. Perhaps the scenarios design did not work due to its verbal nature. Selecting a product will allow participants to decide more spontaneously. A few challenges to this approach are finding whether the products contain predominantly each of the motives and verifying that the participants selected the products due to the motives feature.

3.4 Conclusion

Literature on implicit motives is mute on the mechanisms that link implicit motives with behavior. When exists, it is speculative and has not been directly investigated. This study was a promising first take to address the issue. Similarly content of intuitive decisions has been a topic that is neglected within both the psychology and the economics field. This study was the first to connect motivational sources such as implicit and explicit motives to intuitive and deliberative decisions.

Evidence for the proposed relations between motives and decision mode has not been found. The problem with implicit motive measure and the complexity of intuitive and deliberative processes have hampered attempts to properly test the hypotheses. Alternatively, implicit motives might not influence decisions at all or that the hypotheses might have been misspecified or should be further qualified. The relation between intuitive process and implicit motives might manifest in less controlled behaviors such as time spent on activities or enjoyment of the activities. Secondly, the intuitive mode could have been implemented differently by providing large amount of information or by manipulating available resources. Lastly, the hypotheses could be tested in a more suitable domain such as that of moral judgments or on emotionally-laden issues.

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Appendices

Appendix A: Material Set of Pilot Study 1

1. Multi-Motive Grid (Sokolowski et al., 2000)
2. Achievement Motives Scale – Revised (Lang & Fries, 2006)
3. Intuitive and Deliberative Instructions
4. Decision Tasks

Appendix A.1 Multi-Motive Grid (Sokolowski et al., 2000)

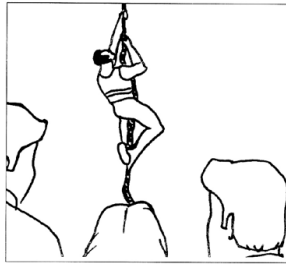
Instruktion

Alle Menschen befinden sich täglich in verschiedenen, ständig wechselnden Lebenssituationen. Mit dem Wechsel der Situationen ändern sich natürlich auch Gedanken und Gefühle. Bekannterweise gibt es dabei auch große Unterschiede zwischen Menschen. Hier geht es um die Bereitschaft, sich in soziale Situationen hineinzusetzen.

Im folgenden sehen Sie einige Bilder und jeweils darunter einige Aussagen. Jede Bildsituation soll eine alltägliche Lebenssituation darstellen. Die Bilder sind bewußt nicht ganz deutlich dargestellt. Versuchen Sie daher, Ihrer Phantasie freien Lauf zu lassen, und versetzen Sie sich in die Rolle einer beliebigen Person auf dem Bild.

Unter jedem Bild stehen eine Reihe von Gedanken, Gefühlen und Erlebnisweisen, die man in dieser Situation haben kann. Prüfen Sie bitte zu jeder einzelnen Aussage, ob diese in der dargestellten Situation zutrifft oder nicht, und kreuzen Sie dann das Feld für „ja“ oder für „nein“ an. Denken Sie darüber nicht lange nach, sondern versuchen Sie, Ihrem spontanen Eindruck zu folgen.

Wenn Sie so alle Aussagen zu einem Bild beantwortet haben, gehen Sie zum nächsten Bild über.



1

Ja Nein

Man ist froh, den anderen getroffen zu haben		
Hier kann das eigene Ansehen verloren gehen		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Die Macht anderer befürchten		
Hier schwierige Aufgaben lieber nicht sofort in Angriff nehmen		
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift		
Hier kann man das eigene Ansehen erhöhen		



2

Ja Nein

Hier kann das eigene Ansehen verloren gehen		
Sich hierbei den Erfolg zutrauen		
Hier kann man leicht vom anderen zurückgewiesen werden		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Die Macht anderer befürchten		
Man fürchtet, den anderen zu langweilen		



3

Ja Nein

Man ist froh, den anderen getroffen zu haben		
Hier kann das eigene Ansehen verloren gehen		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Die Macht anderer befürchten		
Hier schwierige Aufgaben lieber nicht sofort in Angriff nehmen		
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift		



4

Ja Nein

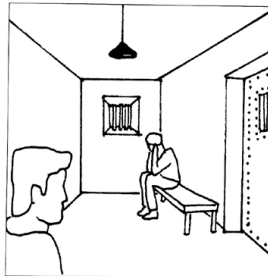
Sich hierbei den Erfolg zutrauen		
Hier kann man leicht vom anderen zurückgewiesen werden		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Hierbei Stolz empfinden, weil man etwas kann		
Man fürchtet, den anderen zu langweilen		
Hier schwierige Aufgaben lieber nicht sofort in Angriff nehmen		
Hier kann man das eigene Ansehen erhöhen		



5

Ja Nein

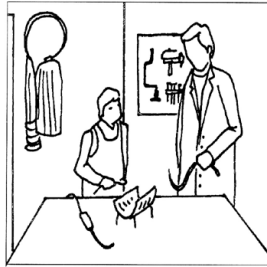
Man ist froh, den anderen getroffen zu haben			
Hier kann das eigene Ansehen verloren gehen			
Hier kann man leicht vom anderen zurückgewiesen werden			
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken			
Die Macht anderer befürchten			
Hier schwierige Aufgaben lieber nicht sofort in Angriff nehmen			
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift			



6

Ja Nein

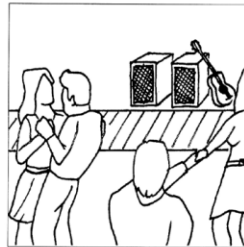
Sich hierbei den Erfolg zutrauen			
Hier kann man leicht vom anderen zurückgewiesen werden			
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken			
Hierbei Stolz empfinden, weil man etwas kann			
Man fürchtet, den anderen zu langweilen			
Hier schwierige Aufgaben lieber nicht sofort in Angriff nehmen			
Selber Einfluß haben wollen			



7

Ja Nein

Hier kann das eigene Ansehen verloren gehen		
Sich hierbei den Erfolg zutrauen		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Hierbei Stolz empfinden, weil man etwas kann		
Hier schwierige Aufgaben lieber nicht sofort in Angriff nehmen		
Selber Einfluß haben wollen		
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift		
Hier kann man das eigene Ansehen erhöhen		



8

Ja Nein

Man ist froh, den anderen getroffen zu haben		
Hier kann das eigene Ansehen verloren gehen		
Sich hierbei den Erfolg zutrauen		
Hier kann man leicht vom anderen zurückgewiesen werden		
Die Macht anderer befürchten		
Hierbei Stolz empfinden, weil man etwas kann		
Man fürchtet, den anderen zu langweilen		
Selber Einfluß haben wollen		
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift		
Hier kann man das eigene Ansehen erhöhen		



9

Ja Nein

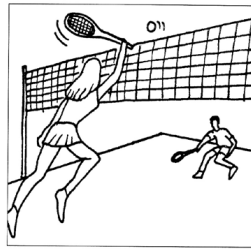
Hier kann das eigene Ansehen verloren gehen		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Die Macht anderer befürchten		
Selber Einfluß haben wollen		



10

Ja Nein

Man ist froh, den anderen getroffen zu haben		
Sich hierbei den Erfolg zutrauen		
Hier kann man leicht vom anderen zurückgewiesen werden		
Hierbei Stolz empfinden, weil man etwas kann		
Man fürchtet, den anderen zu langweilen		
Selber Einfluß haben wollen		
Hier kann man das eigene Ansehen erhöhen		



11

Ja Nein

Man ist froh, den anderen getroffen zu haben		
Sich hierbei den Erfolg zutrauen		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Hierbei Stolz empfinden, weil man etwas kann		
Selber Einfluß haben wollen		
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift		
Hier kann man das eigene Ansehen erhöhen		



12

Ja Nein

Sich hierbei den Erfolg zutrauen		
Bei diesen Aufgaben an mangelnde spezielle Fähigkeiten denken		
Hierbei Stolz empfinden, weil man etwas kann		
Hier schwierige Aufgaben lieber nicht sofort in Angriff nehmen		
Selber Einfluß haben wollen		
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift		
Hier kann man das eigene Ansehen erhöhen		



13

Ja Nein

Man ist froh, den anderen getroffen zu haben			
Die Macht anderer befürchten			
Selber Einfluß haben wollen			
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift			
Hier kann man das eigene Ansehen erhöhen			



14

Ja Nein

Hier kann das eigene Ansehen verloren gehen			
Hier kann man leicht vom anderen zurückgewiesen werden			
Die Macht anderer befürchten			
Hierbei Stolz empfinden, weil man etwas kann			
Man fürchtet, den anderen zu langweilen			
Man hofft, dem anderen näher zu kommen, wenn man selbst die Initiative ergreift			

Appendix A.2 Achievement Motives Scale (Lang & Fries, 2006)

The following statements were accompanied by a 4-point scale ranging from (1) fits me perfectly to (4) does not fit me at all. The exact wordings in German were as follow: (1) trifft genau auf mich zu, (2) trifft überwiegend (größtenteils) auf mich zu, (3) trifft überwiegend (größtenteils) auf mich zu and (4) trifft auf mich überhaupt nicht zu. The first five statements measured Hope for Success and the later five statements measured Fear of Failure.

1. Ich mag Situationen, in denen ich feststellen kann, wie gut ich bin.
2. Wenn mir ein Problem gestellt wird, das ich vielleicht lösen kann, dann reizt es mich, damit sofort anzufangen.
3. Situationen, in denen ich von meinen Fähigkeiten Gebrauch machen kann, machen mir Spaß.
4. Mich reizen Situationen, in denen ich meine Fähigkeiten testen kann.
5. Ich fühle mich zu Arbeiten hingezogen, in denen ich die Möglichkeit habe, meine Fähigkeiten zu prüfen.
6. In etwas schwierigen Situationen, in denen viel von mir selbst abhängt, habe ich Angst zu versagen.
7. Es beunruhigt mich, etwas zu tun, wenn ich nicht sicher bin, daß ich es kann.
8. Arbeiten, die ich nicht schaffen kann, machen mir Angst, auch dann, wenn niemand meinen Mißerfolg bemerkt.
9. Auch wenn niemand zuguckt, fühle ich mich in neuen Situationen ziemlich ängstlich.
10. Wenn ich ein Problem nicht sofort verstehe, werde ich ängstlich.

Appendix A.3 Intuitive and Deliberative Instructions

Intuitive Condition

Willkommen beim Experiment der Abteilung Allgemeine Psychologie 2 der Friedrich-Schiller-Universität Jena. Sie werden mit 2 Euro für Ihre Teilnahme am Experiment belohnt. Das Experiment wird etwa 30-45 Minuten Ihrer Zeit in Anspruch nehmen.

Diese Studie untersucht die Beziehung zwischen verschiedenen Aspekten der Motivation, um daraus Ihre allgemeinen Präferenzen festzustellen. Insbesondere würde diese Studie gerne die Rolle der Intuition bei der Entscheidungsfindung feststellen. Die Entscheidung durch Intuition / spontane Entscheidung hat sich laut Wilson (1993) als positives Element für die subjektive Zufriedenheit nach der Entscheidungsfindung herausgestellt und hat laut Halberstadt und Levine (2006) ebenfalls eine bessere Leistung bei objektiven Kriterien zur Folge.

Im Folgenden werden Sie mit einer Reihe von Entscheidungsfragen konfrontiert. Bitte folgen Sie bei der Beantwortung allein Ihrer Intuition und Ihren Präferenzen. Bei der Beantwortung gibt es keine richtigen oder falschen Antworten. Intuition ist auch als Bauchgefühl, spontane Entscheidung oder Auswahl einer Option zu verstehen, welche keine unmittelbaren Beweggründe benötigt. Bitte beantworten Sie deshalb die Fragen allein nach Ihrem Gefühl und nach dem, was Sie als geeignet erachten.

Deliberative Condition

Willkommen beim Experiment der Abteilung Allgemeine Psychologie 2 der Friedrich-Schiller-Universität Jena. Sie werden mit 2 Euro für Ihre Teilnahme am Experiment belohnt. Das Experiment wird etwa 30-45 Minuten Ihrer Zeit in Anspruch nehmen.

Diese Studie untersucht die Rolle der Überlegung bei der Entscheidungsfindung. Mangelnde Überlegung führt zu schlechteren Ergebnissen bei der Findung einer guten Entscheidung. Finanzkrise und Episoden des Bedauerns werden den negativen Folgen von Mangel an Überlegung zugeschrieben. Verschiedene Verzerrungen und fehlerhafte Heuristiken wurden ebenfalls ausführlich dokumentiert (Kahneman, 2010). Wir möchten testen, ob Überlegung in verschiedenen Aspekten der Entscheidungen zu mehr Kongruenz mit verschiedenen Aspekten des Selbst führt.

Im folgenden finden Sie eine Reihe von Entscheidungsfragen. Bitte denken Sie sorgfältig über ihre Antworten nach. Die Studie ist über Ihre Vorlieben und daher, bitten wir Sie, gründlich darüber nachzudenken, was eine gute Entscheidung für Sie ist. Bitte geben Sie 3 der wichtigsten Gründe / Begründungen an, warum Sie sich für die von Ihnen gewählte Option entschieden haben. Es gibt nur 6 Entscheidungsfragen zu erledigen und somit bitten wir Sie, sich Zeit zu nehmen und sich so gut wie Sie können, alle Pro und Contra der Wahl zu überlegen. Seien Sie ganz eindeutig in Ihrer Antwort und erläutern Sie diese so ausführlich wie Sie es für notwendig halten.

Appendix A.4 Decision Tasks

The decision tasks consisted of six scenarios. The content of the decision tasks is exactly the same in the intuitive and deliberative condition, except that participants were asked to state their reasons in the deliberative condition only.

1. Geschäftsleitung eines Unternehmens

+ Geschäftsleitung des Unternehmens AB

Informationen zum Unternehmen

- AB ist ein Einzelhandelsunternehmen, welches kleinere Produkte, wie Shampoo, Seife und kleine Süßwaren verkauft.
- In einer Filiale wird ab sofort ein Sachbearbeiter gesucht.

Stellenbeschreibung

- Stellt ohne weiteres die Anlieferung der Waren durch die Zulieferer sicher.
- Folgt spezifischen Anweisungen.
- Gibt der Geschäftsführung regelmäßig Berichte ab.

+ Geschäftsführung des Unternehmens XY

Informationen zum Unternehmen

- XY ist ein Unternehmen des Einzelhandelsunternehmens, welches Werkzeuge, Gartengeräte und Baumaterialien verkauft.
- In einer Filiale wird ab sofort ein Sachbearbeiter gesucht.

Stellenbeschreibung

- Stellt die Verfügbarkeit der Produkte und den Lagerbestand sicher.
- Er leitet engagiert die Warenauslage und das Aussehen der Filiale.
- Bringt neue Zulieferer in Erfahrung und gewinnt diese.

Antwort/ Auswahl:

- Sachbearbeiter des Unternehmens AB Sachbearbeiter des Unternehmens XY

2. Politiker

Informationen zur Partei Z und X

- Die Partei X und Z vertritt die Interessen der Kleinstadt Belding im Staat Michigan.
- Sie führt Erhebungen durch, reicht Berichte ein und stellt Anträge an die Regierung Michigans, die über die jährliche Finanzierung und die Zulassung ausgewählter Projekte bestimmt.

+ Assistent der Parteileitung der Partei Z

Stellenbeschreibung:

- Partei X und Partei Z arbeitet im gleichen Gebiet.
- Sie haben eine andere Organisationsstruktur, allerdings greifen sie auf bereits existierende Erhebungen zurück und entwickeln Anträge für die Regierung des Staates Michigan. Alle Mitarbeiter sollten in der ersten Zeit ihrer Tätigkeit einen Antrag einreichen. Die Anträge werden anonym eingereicht.

+ Assistent der Parteileitung der Partei X

Stellenbeschreibung:

- Erhebungen in Auftrag geben und Berichte schreiben.
- Eine detaillierte Arbeitsweise und Achtsamkeit gegenüber Details sind entscheidend für diesen Job. Die Politik und die Projekte hängen schwer von den Ergebnissen dieser Erhebungen ab.

Antwort/ Auswahl:

- Assistent der Parteileitung der Partei Z Assistent der Parteileitung der Partei X

3. Fußballspieler gesucht

Beschreibung des Teams

- Das Team von Carl-Zeiss Jena sucht nach ein neues Mitglied im Team.
- Carl-Zeiss Jena war die beste Fußballmannschaft der DDR und vertrat bereits Deutschland bei dem Europacup.
- In letzter Zeit stieg die Mannschaft in die vierte deutsche Liga ab.
- Aktuell sucht sie nach frischen neuen Talenten, die positive Veränderungen in das Team bringen.

Zwei Posten sind verfügbar:

+ Verteidiger In Carl-Zeiss wird das die Position der Verteidigung auf links sein. Sie beinhaltet Verantwortung in dieser Position und gemeinsam mit anderen Verteidigern. Die Spieler bewegen sich selten aus den Seiten ihres Spielfeldes. Unabdingbar ist, dass er den an ihn übertragenen Teil des Spielfeldes verteidigt.

+ Mittelfeldstürmer Dies ist eine wichtige Position, die eine exakte Einschätzung der Situation und exzellenten Einsatz im Spiel erfordert. Die Bedeutung dieser Position hängt vom Spieler selbst ab; wie gut ist der Spieler in der Lage eine vorteilhafte Position auf dem Spielfeld zu finden. Der Ball sollte meistens zu den Stürmern gespielt werden, sodass die Wahrscheinlichkeit ein Tor zu schießen, maximiert wird.

Antwort/ Auswahl:

Verteidiger

Mittelfeldstürmer

4. *Easy Going Magazin sucht Angestellte, um neue Positionen zu besetzen.*

Informationen zum Magazin

- Das Easy Going Magazin richtet sich an Studierende, die sich in der späten Phase ihres Studiums befinden. Das Magazin bietet Informationen über Freizeitangebote in der Stadt und ihrer Umgebung an, genauso wie begehrte Tipps über weitere studentische Aktivitäten und Jobangebote. Derzeit sieht sich das Magazin in Konkurrenz zum Online-Zugang zu sozialen Medien. So beabsichtigt das Easy Going Magazin jetzt lokale Informationen bereitzustellen, welche sich online nur schwer finden lassen.

Die neuen verfügbaren Stellen sind:

+ Reporter

- Der Reporter hat die Freiheit, Informationen auszuwählen, von denen er glaubt, dass diese noch nicht ohne weiteres verfügbar sind. Diese sollten von Interesse für Studenten sein, deren Studienzeit sich dem Ende neigt. Kreativität und hohe Eigenmotivation sind erforderlich. Auf ein hohes Leistungsniveau und exzellente Qualität ist mit einigen Einschränkungen selbst zu achten.

+ Junior Herausgeber

- Die Aufgabe ist, Zusammenfassungen und früh eingereichte Artikel auszuwählen und diese auf der Basis bestimmter Kriterien einzuschätzen. Häufig wird diese Prioritätsliste von anderen Juniorherausgebern gegengeprüft, Objektivität und Sinnhaftigkeit werden für einen Aufstieg förderlich sein. Junior herausgeber assistieren Herausgebern während des gesamten Arbeitsprozesses

Antwort/ Auswahl:

Reporter Junior Herausgeber

5. *Gutschein*

Sie sind der Glückliche, der sich über ein Geschenk freuen kann; das Geschenk ist ein Gutschein für Freizeitaktivitäten. Sie können zwischen unterschiedlichen Gutscheinen wählen, bitten wählen Sie, welchen Sie haben möchten.

+ Kletterwand

- Kletterwände bieten sportliche Aktivitäten, bei denen man alle Muskeln des Körpers und die Ausdauer, entsprechend seiner momentanen Fitness trainiert. Der Pfad bietet verschiedene Routen mit unterschiedlichen Schwierigkeitsstufen. Der Punkt, an dem man aufhören möchte, kann selbst gewählt werden, für Anfänger und Profis gleichermaßen. Eine Sicherheitsausrüstung, die Eintrittsgebühr und eine Stunde Einführungszeit sind im Gutschein inbegriffen.

+ Kanufahren in der Natur

- Kanufahren in der Natur ist Teil eines Universitätssportkurses. Es ist leicht, günstig und ein gutes Training für den gesamten Körper. Dieser Kurs wird Sie entlang der schönen Ufer der Saale führen. Informationsbroschüre über Flora und Fauna an der Saale, Kanu samt Paddeln und ein Kursleiter für die Fahrt sind im Gutschein inbegriffen.

Antwort/ Auswahl:

 Kletterwand Kanufahren in der Natur

6. *Running Man TV Show*

Sie sind eingeladen, Gast der erfolgreichen Show „Running Man“ zu sein. In der Show findet eine Reihe von Spielen statt. Am Ende erhält der Gewinner einen Schlüssel aus echtem Gold. Es gibt zwei Folgen, aus denen Sie auswählen können. Bitte wählen Sie eine der beiden aus:

+ Individuell

- Die individuell Möglichkeit beinhaltet eine Reihe von 10 Spielen, in denen die 10 Teilnehmer als Einzelkämpfer gegeneinander antreten (z.B. Verstecken; der Schnellste, der eine Aufgabe löst usw.). Der Sieg bei einem Spiel gibt Vorteile für das finale Spiel (bei welchem es den Preis gibt). Nur eine Person, der finale Gewinner, gewinnt den Preis.

+ Gruppe

- Bei die gruppe Möglichkeit werden die 10 Teilnehmer in zwei Gruppen unterteilt und diese Gruppen treten in 6 Spielen gegeneinander an. Jeder Gewinn in einem Spiel bietet Vorteile für das finale Spiel. Die Gruppe, die das Endspiel für sich entscheidet, teilt sich den Preis untereinander (gleicher Preis wie in Option 1).

Antwort/ Auswahl:

Individuell

Gruppe

Appendix B: Experiment 1

1. Unified Motive Scales (Schönbrodt & Gerstenberg, 2012)
2. Cognitive Reflection Test (Frederick, 2005)
3. Post-decision Questionnaire
4. Preference for Intuition and Deliberation (Betsch, 2004)
5. Decision Tasks
6. Correlation Table of Motive Measures (MMG & UMS)

Appendix B.1 Unified Motive Scales (Schönbrodt & Gerstenberg, 2012)

Two different item formats are present in the UMS: classical items formulated as statements, which require an agreement rating, and goals, which require an importance rating. Statements are rated on a 6-point Likert scale where each response option is labeled (0 = trifft überhaupt nicht zu, 1 = trifft nicht zu, 2 = trifft eher nicht zu, 3 = trifft eher zu, 4 = trifft ziemlich zu, 5 = trifft vollkommen zu [0 = strongly disagree, 1 = disagree, 2 = rather disagree, 3 = rather agree, 4 = agree, 5 = strongly agree]). Goals as well are rated on a 6-point Likert scale where each response option is labeled (0 = nicht wichtig, 1 = ein wenig wichtig, 2 = etwas wichtig, 3 = wichtig, 4 = sehr wichtig, 5 = außerordentlich wichtig [0 = not important to me, 1 = of little importance to me, 2 = of some importance to me, 3 = important to me, 4 = very important to me, 5 = extremely important to me.]). Items from the PRF, AMS, MAFF, and new items need the statement rating, items taken from the PVQ and GOALS need the importance rating. We recommend first presenting all statement items as a block and then presenting all goals as a second block. Similar items should not be presented consecutively.

UMS Hope Scales

Source	Original German Item	English Version
<u>Achievement</u>		
PVQ	Meine Leistung stets auf einem hohen Niveau zu halten.	Maintaining high standards for the quality of my work.
PVQ	Arbeit von hoher Qualität zu leisten.	Personally producing work of high quality.
PVQ	Projekte, die mich bis an die Grenze meiner Leistungsfähigkeit bringen.	Projects that challenge me to the limits of my ability.
GOALS	Mich ständig verbessern.	Continuously improve myself.
PVQ	Standig neue, interessante und herausfordernde Ziele und Projekte.	Continuously engage in new, exciting, and challenging goals and projects.
PVQ	Verantwortung für schwierige und herausfordernde Aufgaben und Ziele zu übernehmen.	Opportunities to take on more difficult and challenging goals and responsibilities.
PVQ	Eigenverantwortlich etwas besser machen zu können als es bisher gemacht wurde.	Personally doing things better than they have been done before.
AMS	Ich fühle mich zu Arbeiten hingezogen, in denen ich die Möglichkeit habe, meine Fähigkeiten zu prüfen.	I am attracted to situations that allow me to test my abilities.
PRF	Ich habe mir vorgenommen, wenigstens etwas mehr zu	My goal is to do at least a little bit more

leisten als irgend jemand vor mir.

than anyone else has done before.

PVQ Etwas Neues schaffen zu können.

Opportunities to create new things.

Affiliation

PRF Ich versuche, so oft wie möglich in der Gesellschaft von Freunden zu sein.

I try to be in the company of friends as much as possible,

GOALS Viel mit anderen Menschen zusammen unternehmen.

Engage in a lot of activities with other people.

PRF Ich verbringe viel Zeit damit, Freunde zu besuchen.

I spend a lot of time visiting friends.

UMS Zusammentreffen mit anderen Menschen machen mich glücklich.

Encounters with other people make me happy.

PRF Oft wäre ich lieber allein als mit einer Gruppe von Freunden zusammen.#

Often I would rather be alone than with a group of friends.#

PRF Ich bemühe mich, andere Leute kennen zu lernen.

I go out of my way to meet people.

PRF Ich entscheide mich meist für Freizeitbeschäftigungen, die ich zusammen mit anderen Leuten ausüben kann.

I choose hobbies that I can share with other people.

MAFF Ich schliesse gern soviel Freundschaften wie ich kann.

I like to make as many friends as I can.

GOALS Einen grossen Bekanntenkreis haben.
Wenn ich neue Leute kennenlernen kann, fühle ich mich voller Energie.

Have a wide circle of friends.
I feel a rush of energy when I get to know new people.

UMS

Power

PVQ Über eine Gruppe oder eine Organisation Kontrolle ausüben zu können.

The opportunity to exercise control over an organization or group.

GOALS Einfluss ausüben können

Be able to exert influence.

UMS Ich habe gern das Sagen.

I like to have the final say.

PRF Ich strebe nach Positionen, in denen ich Autorität habe.

I would like to be an executive with power over others.

PVQ In einer Führungsposition zu sein, wo andere für mich arbeiten und von mir Anweisungen erhalten.

To be in a leadership position in which others work for me or look to me for direction.

PRF Ich habe nur wenig Interesse daran, andere zu führen.#

I have little interest in leading others.#

PRF Ich fühle mich in meinem Element, wenn es darum geht, die Tätigkeiten anderer zu leiten.

I feel confident when directing the activities of others.

PVQ Andere Menschen beeinflussen zu können.

Opportunities to influence others.

PRF	Ich versuche, andere unter meinen Einfluss zu bekommen, anstatt zuzulassen, dass sie mich kontrollieren.	I try to control others rather than permit them to control me.
PVQ	Eine Stellung mit Prestige und Ansehen.	A position with prestige.

PVQ = Personal Values Questionnaire, PRF = Personality Research Form, AMS = Achievement Motive Scale, MAFF = Mehrabian Affiliation Scale. UMS = Unified Motive Scales. Reverse coded items are marked with a #.

UMS Fear Scales

Source	Original German Item	English Version
<u>Failure</u>		
AMS	In etwas schwierigen Situationen, in denen viel von mir selbst abhängt, habe ich Angst zu versagen.	I am afraid of failing in somewhat difficult situations when a lot depends on me.
AMS	Es beunruhigt mich, etwas zu tun, wenn ich nicht sicher bin, dass ich es kann.	I feel uneasy doing something if I am not sure of succeeding.
AMS	Wenn ich ein Problem nicht sofort verstehe, werde ich angstlich.	If I do not understand a problem immediately, I start feeling anxious.
<u>Rejection</u>		
UMS	Wenn ich jemanden neu kennenlerne, habe ich of Angst, abgelehnt zu werden.	When I get to know new people, I often fear being rejected by them.
UMS	Wenn ich Kontakt zu Fremden aufnehme und die zeigen mir die kalte Schulter, dann fühle ich mich unsicher.	Being given the cold shoulder when approaching strangers makes me feel insecure.
UMS	Ich habe kein Problem damit von anderen Personen zuruckgewiesen zu werden.#	Being rejected is no big deal for me.#
<u>Losing Control</u>		
UMS	Ich bekomme Angst, wenn sich Dinge meiner Kontrolle entziehen.	I become scared when I lose control over things.
UMS	Wenn ich merke, dass ich auf manche Dinge keinen Einfluss habe, dann bin ich schnell beunruhigt.	I start worrying instantly when I notice that I don't have an impact on some things.
UMS	Die Vorstellung in einer Situation machtlos zu sein macht mir Angst.	The idea of not having any control in a situation frightens me.

Note. AMS = Achievement Motive Scale, New = items newly constructed for the present study. Reverse coded items are marked with a #

Appendix B.2 Cognitive Reflection Test (Frederick, 2005)

Ein Schläger und ein Ball kosten insgesamt \$ 1,10. Der Schläger kostet 1 Dollar mehr als der Ball. Wie viel kostet der Ball?

Wenn 5 Maschinen 5 Minuten brauchen, um 5 Produkte herzustellen, wie lange würden 100 Maschinen brauchen, um 100 Produkte herzustellen?

In einem See gibt es ein Beet mit Seerosen. Jeden Tag verdoppelt sich dieses Beet in der Größe. Wenn es 48 Tage dauert, bis das Beet den kompletten See bedeckt, wie lange würde es dauern, bis die Hälfte des Sees bedeckt ist?

Appendix B.3 Post-Decision Questionnaire

Instruction: Im Folgenden werden dir Fragen darüber gestellt, wie du während des Experiments Entscheidungen getroffen hast. (In the following you will be asked how you have made your decision during the experiment.)

Post-Decision Questionnaire (Intuitive Condition)

Original German Item	English Version
Wenn ich Entscheidungen traf, beobachtete ich sorgfältig meine innersten Gefühle.	When making decision on the scenarios, I listen carefully to my deepest feelings.
Wenn ich Entscheidungen traf, dachte ich über mich selbst nach und über meine Vorlieben.	When making decision on the scenarios, I think about myself and my preference
Bei meinen Entscheidungen spielten Gefühle eine große Rolle.	My feelings play an important role in the scenarios decisions
Wenn ich mich entschied, richtete ich mich nach meinem ersten Eindruck.	When deciding on the scenarios, I take my first impression
Wenn alle möglichen Alternativen gleich gut sind, entschied ich mich meistens für die, die mir gefühlsmäßig am meisten zusagte.	In the scenarios, when all possible alternatives are equally good, I choose most of that appeals to me the most emotionally.

Post-Decision Questionnaire (Deliberative Condition)

Original German Item	English Version
Bevor ich Entscheidungen traf, dachte ich meistens erst mal gründlich nach.	Before making decisions on the scenarios, I think them through
Bevor ich Entscheidungen traf, dachte ich meistens erst mal über meine Ziele nach, die ich erreichen wollte.	Before making decision on the scenarios, I think about the goals I want to achieve
Wenn ich Entscheidungen traf, schmiedete ich lieber ausgefeilte Pläne, als etwas dem Zufall zu überlassen.	When making decision on the scenarios, I keep in mind, that I prefer making detailed plans rather than leaving things to chance.
Beim lösen der Optionen nahm ich zuerst die Fakten und Details auseinander, bevor ich mich entschied.	When I solve the option in the scenarios, I first analyze the facts and details before I decide
Beim Entscheiden dachte ich mehr über meine Pläne und Ziele nach als andere Menschen.	In deciding on the scenarios, I think more about my plans and goals than other people do

Appendix B.4 Preference for Intuition and Deliberation (Betsch, 2004)

Instruction: Bitte beantworte alle folgenden Fragen über dein Leben im Allgemeinen. Deine Antworten sollten damit übereinstimmen, wie du generell Entscheidungen triffst. (Please answer the following questions with regards to how you normally are. Your answers should be determined by how you usually make your decisions.)

Preference for Intuition

Original German Item	English Version
Bei den meisten Entscheidungen ist es sinnvoll, sich ganz auf sein Gefühl zu verlassen.	With most decisions, it makes sense to completely rely on your feelings.
Ich bevorzuge emotionale Menschen.	I prefer emotional people.
Ich bin ein sehr intuitiver Mensch.	I am a very intuitive person.
Ich mag emotionale Situationen, Diskussionen und Filme.	I like emotional situations, discussions, and movies.
Wenn es darum geht, ob ich anderen vertrauen soll, verlasse ich mich auf meine Gefühle.	When it comes to trusting people, I can usually rely on my gut feelings.

Preference for Deliberation

Original German Item	English Version
Ich bin perfektionistisch.	I am a perfectionist.
Ich mag Situationen nicht, in denen ich mich auf meine Intuition verlassen muss.	I do not like situations that require me to rely on my intuition.
Ich denke erst nach, bevor ich handle.	I think before I act.
Bevor ich eine Entscheidung treffe, berechne ich sorgfältig die Vor- und Nachteile meiner Entscheidung.	Before I make a decision, I calculate carefully the pro and cons of my decision.
Ich bevorzuge komplexe anstatt einfache Probleme.	I prefer complex to simple problems.

Appendix B.5 Decision Tasks

Scenario 1: Du würdest gern ein Treffen mit/für deine Kollegen, Freunde oder Bekannte organisieren und Gastgeber sein. Es gibt mehrere Möglichkeiten, wie das Essen während der Party organisiert wird:

Achievement Option

Dies wäre eine gute Chance für mich, meine Kochkünste zu verbessern. Ich möchte gern das Essen für die Party vorbereiten.

Affiliation Option

Ich möchte, dass sich alle willkommen, verbunden und involviert fühlen. Ich werde das Essen gemeinsam mit den anderen Leuten vorbereiten.

Power Option

Dies ist eine gute Gelegenheit, allen meine speziellen Kochrezepte zu zeigen. Jeder soll kommen und ich werde ihnen zeigen, was sie machen sollen, um das Essen zuzubereiten.

Scenario 2: Du nimmst an einem psychologischen Experiment teil. Dabei gibt es drei Arten von Spielen, die du spielen kannst. Welches würdest du auswählen?

Achievement Option

In dem Spiel "Exzellenter Blob" wird es dir ermöglicht, deine Motorik- und Aufmerksamkeitsfähigkeiten zu testen. Du bekommst ein Feedback über deinen Fortschritt, damit du deine

Affiliation Option

Im Spiel "Bindung" geht es darum sozial, freundlich und kooperativ zu sein. In dem Spiel kannst du kommunizieren, interagieren und neue Bekanntschaften machen.

Power Option

Das Spiel "Krieg von Athen" zeigt die Ergebnisse in einem Ranking-System. Deine höchste Punktzahl sowie dein Name wird in der Chronik aufgenommen, welche alle anderen Spieler

Fähigkeiten verbessern
kannst.

sehen können.

Scenario 3: Stell dir vor, dass du zwischen unterschiedlichen Karrierewegen entscheiden müsstest, welche dich am Ende jeweils zu einen der folgenden Berufe führen. Welchen Weg würdest du wählen?

Achievement Option

Deine Arbeit ist die Kreation eines exzellenten Produktes. Du leitest die besten Forschungs- und Entwicklungsentwürfe während der kontinuierlicher Verbesserung des Produktes.

Affiliation Option

Deine Aufgabe ist es, die Einheit und die Motivation der Mitarbeiter im Team zu erhalten. Du sollst gemeinsame Aktivitäten organisieren und die Teammitglieder zu freundlichen Interaktionen miteinander ermutigen.

Power Option

Du wirst als Leiter eines kleinen Teams eingesetzt, das am Ende einen Empfehlungsbericht für die Firma vorlegen muss. Du sammelst Informationen und prüfst die Arbeit deiner Mitglieder.

Scenario 4: Stell dir vor, du bereitest dich auf eine Prüfung vor. Welche der folgenden Arten bevorzugst du?

Achievement Option

Ich studiere allein und erstelle einen Plan, was ich jeden Tag in der Vorbereitungszeit erreichen möchte. So kann ich die Fortschritte, die ich mache, genau überprüfen.

Affiliation Option

Ich gründe eine Arbeitsgruppe, damit wir uns in der harten Zeit der Vorbereitung gegenseitig emotional unterstützen können.

Power Option

Ich unterrichte die anderen und diskutiere mit ihnen das Material für die Prüfung. Ich möchte wissen, was andere tun und ich versuche sie von der besten Art der Vorbereitung zu überzeugen.

Scenario 5: Du erhältst ein Stipendium für ein Austauschprogramm. Das ist eine großartige Gelegenheit. An welche Universität würdest du gehen?

Achievement Option

Universität Ä bietet tolle Kurse aus deinem Fachgebiet an und wäre eine gute Chance für dich, deine Themen besser zu verstehen.

Affiliation Option

Universität Ö ist eine ausgelassene Universität mit vielen studentischen Aktivitäten und Möglichkeiten, um neue Leute zu treffen.

Power Option

Universität Ü ist hoch renommiert und den meisten Leuten bekannt. Dies kann in Zukunft beeinflussen, wie die

Menschen deinen
Lebenslauf sehen.

Scenario 6: Was sind deine Vorlieben bei der Wahl von sportlichen Aktivitäten?

Achievement Option

Ich liebe Sportarten, die meine Fähigkeiten herausfordern und mir erlauben zu sehen, wie gut ich beim Sport bin. Nicht zu schwer und nicht zu leicht. Ich möchte dabei gut sein.

Affiliation Option

Ich liebe Sportarten, die viel Teamarbeit einbeziehen. Es macht Spaß, gemeinsam Sport zu treiben und ich kann die Beziehung zu meinen Freunden und Bekannten auf diese Weise vertiefen.

Power Option

Ich liebe Sportarten, bei denen ein Publikum erlaubt ist. Andere sollen mir zujubeln und mich ermutigen, dadurch wird der Sport zu einer lustigen Erfahrung. Zu gewinnen gibt mir einen Kick.

Scenario 7: An einem sonnigen Tag im Park hast du dich plötzlich gefragt, ob du jemals ein Haustier haben würdest, vielleicht irgendwann in der Zukunft. Aber es gibt viele Arten von Haustieren, auch viele Arten von Hunden und Katzen. Welches wäre ein gutes Haustier für dich?

Achievement Option

Ein intelligentes Tier, das Tricks lernen kann und über Hügel und Löcher springt. Es macht mich glücklich, verschiedene Level von Tricks zu erreichen.

Affiliation Option

Ein Haustier ist ein Gefährte, also werde ich nach einem mitfühlenden Tier suchen, das mich begleitet, wenn ich mich traurig oder glücklich fühle.

Power Option

Ein großes, starkes und dominantes Haustier wäre gut für mich. Es wird mir Respekt verschaffen, wenn ich es mitnehme.

Scenario 8: Du hattest dir selbst versprochen, irgendeiner Art ehrenamtlicher Arbeit nachzugehen. Nachdem du etwas herum gefragt haben, bist du zu dieser Entscheidung gekommen:

Achievement Option

Reparatur- und Fortschrittsarbeit. Ich würde arbeiten, um meine Stadt zu verbessern und kreative Dinge erfinden, die in der Stadt umgesetzt werden (neue Systeme, neue Anlagen).

Affiliation Option

Fürsorge für die Bedürftigen (Arme / Flüchtlinge / Kinder). Es ist gut, eine herzliche Beziehung zu anderen zu haben und denjenigen zu helfen, die in Not sind.

Power Option

Eine Kampagne, um das Bewusstsein zu erhöhen. Ich möchte gern mit Menschen sprechen und meine Umwelt beeinflussen, um sie in eine bestimmte Richtung zu lenken.

Appendix B.6 Correlations between Motive Measures (MMG & UMS)

	MMG- HS	MMG- HA	MMG- HC	UMS- HS	UMS- HA	UMS- HC	MMG- FF	MMG- FA	MMG- FC	UMS- FF	UMS- FA	UMS- FC
MMG- HS	-											
MMG- HA	.24*	-										
MMG- HC	.60**	.24*	-									
UMS- HS	-.06	.00	-.13	-								
UMS- HA	.04	.03	.12	.31*	-							
UMS- HC	.22	-.13	.31*	.42**	.43**	-						
MMG- FF	.23	.24*	.27*	-.29	.15	.07	-					
MMG- FA	.08	.01	.08	-.06	-.00	.01	.32**	-				
MMG- FC	.01	-.27*	-.03	-.01	.03	.12	.32**	.48**	-			
UMS- FF	.04	.05	-.03	.09	-.09	-.06	.03	.14	.05	-		
UMS- FA	-.31*	.08	-.12	.07	-.09	-.17	-.04	.16	.06	.44**	-	
UMS- FC	.07	.11	.09	.33**	.06	.34**	.03	.14	.14	.52**	.19	-

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

HS = Hope for Success, HA = Hope for Affiliation, HC = Hope for Control, FF = Fear of Failure, FA = Fear of Affiliation, FC = Fear of Losing Control.

Red rectangles highlight the correlations between implicit and explicit motives in the corresponding hope and fear component.

Appendix C: Summary of Mismatch Regressions

1. Experiment 1
2. Experiment 2
3. Experiment 3
4. Experiment 4

Appendix C.1 Summary of Mismatch Regressions for Experiment 1

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on implicit and explicit Achievement motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Achievement Motive		Explicit Achievement Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	.16	.03	.06	.27*
condition ^a	-.07	.05	-.13	-.01
interaction	.15	.13	.11	.11
R ²	.06	.02	.03	.07
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	-.08	-.09	-.12	.13
condition ^a	-.27*	-.26*	-.21 ⁺	-.24 ⁺
interaction	.12	.21 ⁺	-.22 ⁺	-.14
R ²	.08	.11 ⁺	.12*	.09
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	-.09	.12	.32*	.34**
condition ^a	-.01	.01	-.10	-.09
interaction	-.25*	-.15	-.02	.08
R ²	.06	.04	.10 ⁺	.12 ⁺

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Regressions of choices and ratings of all three motive options with achievement motives, decision modes and their interaction as predictors indicated that the predictor effect of achievement motive was not motive-specific. Explicit achievement motive did not only positively predict ratings of achievement option, but also predicted choices and ratings of power options. We also found that decision mode strongly predicted choices and ratings of affiliation options: Participants in the intuitive as compared to the deliberative mode were more likely to select affiliation option as well as rate affiliation option more positively. With regards to our hypothesis, we found no evidence of interaction between achievement motive and decision mode when predicting choices and ratings of achievement options nor when predicting choices and ratings of power options. We did find a positive weak interaction between implicit achievement motive and decision mode in predicting ratings of affiliation option. This means that the

predictive effect of implicit achievement motive on ratings of affiliation option was stronger in the deliberative as compared to the intuitive condition. This was the opposite of our hypothesis. With regards to the explicit motive, we found a negative weak interaction between motives and choices of affiliation option. This means that the predictive effect of explicit achievement motive on choices of affiliation option was stronger in the intuitive as compared to the deliberative condition. This was also the opposite of our hypothesis. Lastly, we found a significant negative interaction between implicit achievement motive and choices of power options. This indicated that the predictive effect of implicit achievement option on choices of power options was stronger in the intuitive as compared to the deliberative condition. The last finding is consistent with our hypothesis.

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on implicit and explicit Affiliation motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Affiliation Motive		Explicit Affiliation Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	.09	-.03	-.34**	.06
condition ^a	.33*	.29*	.24*	.22 ⁺
interaction	-.02	.07	.20 ⁺	.22 ⁺
R ²	.13*	.07	.29**	.11 ⁺
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	-.05	-.04	.40**	.49**
condition ^a	.02	-.05	.01	-.07
interaction	-.02	-.10	.03	-.00
R ²	.00	.02	.16*	.25**
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	.07	.16	.04	.34**
condition ^a	-.04	-.09	-.03	.04
interaction	.01	-.15	-.03	-.01
R ²	.01	.04	.01	.12 ⁺

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Regressions of choices and ratings of all three motive options with affiliation motives, decision modes and their interaction as predictors indicated that the predictor effect of affiliation motive was not motive-specific. Explicit affiliation motive did not only predict choices of affiliation options, but also predicted choices and ratings of achievement options, as well as ratings of power options. It was also found that decision mode strongly predicted choices and ratings of

achievement options. Participants in the deliberative mode were more likely to select achievement options as well as rate these options more positively. With regards to our hypotheses, we found positive weak interaction effects between explicit affiliation motive and choices and ratings of achievement options. This indicated that the predictive effect of explicit affiliation motive on choices and ratings of achievement options were stronger in the deliberative as compared to the intuitive condition. There were no other interaction effect.

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on implicit and explicit Power motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Power Motive		Explicit Power Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	.18	-.09	-.09	-.03
condition ^a	.40**	.24 ⁺	.33*	.21
interaction	-.19 ⁺	.06	.09	.19
R ²	.19**	.08	.14*	.10 ⁺
	Implicit Power Motive		Explicit Power Motive	
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	-.22 ⁺	-.16	-.06	.03
condition ^a	-.30*	-.27*	-.24 ⁺	-.24 ⁺
interaction	.12	.16	-.01	.04
R ²	.12*	.10 ⁺	.07	.05
	Implicit Power Motive		Explicit Power Motive	
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	.18	.29*	.34**	.54**
condition ^a	.05	-.05	-.01	-.14
interaction	.22 ⁺	.23 ⁺	.10	.07
R ²	.09	.16*	.13*	.31**

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Regressions of choices and ratings of all three motive options with power motives, decision modes and their interaction as predictors indicated that the predictor effect of explicit power motive was specific only to choices and ratings of power options. Implicit power motive, on the other hand, negatively predict choices of affiliation option and positively predict ratings of power options. In the absence of achievement and affiliation motives as predictors, we found both the positive relation of deliberation on the selection and evaluation of achievement options as well as the positive relation of intuition on the selection and evaluation of affiliation options. With regards to our hypothesis, we found that implicit power motives predict choices and ratings of

power options better in the deliberative as compared to the intuitive condition. This is the opposite of our hypothesis.

Appendix C.2 Summary of Mismatch Regressions for Experiment 2

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on explicit Affiliation and Achievement motives, condition (deliberative vs. intuitive), and their interaction.

	Explicit Achievement Motive		Explicit Affiliation Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	.06	.20 ⁺	-.19 ⁺	.06
condition ^a	-.03	-.08	-.06	-.10
interaction	-.15	-.17	.08	.05
R ²	.03	.09 ⁺	.04	.02
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	-.19 ⁺	.18	.14	.16
condition ^a	-.03	.09	.01	.08
interaction	.20 ⁺	.15	-.12	.20 ⁺
R ²	.08	.05	.03	.07
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	.22*	.31**	.10	.36**
condition ^a	.10	-.09	.08	-.10
interaction	-.09	.08	.08	-.01
R ²	.06	.12*	.02	.15**

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on implicit and explicit Affiliation and Achievement motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Power Motive		Explicit Power Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	.06	.03	-.12	.01
condition ^a	-.03	-.10	-.04	-.11
interaction	-.06	.25*	-.20 ⁺	-.27*
R ²	.01	.08	.05	.08+
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	.10	.10	-.05	.10
condition ^a	.01	.08	-.01	.07
interaction	.08	.24*	.21 ⁺	.23 ⁺
R ²	.02	.08 ⁺	.05	.06
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	-.27*	.09	.29*	.51**
condition ^a	.02	.13	.08	-.12
interaction	-.02	.15	-.02	.04
R ²	.08	.06	.09 ⁺	.27**

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Appendix C.3 Summary of Mismatch Regressions for Experiment 3

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on implicit and explicit Achievement motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Achievement Motive		Explicit Achievement Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	.15	.37**	.16	.32*
condition ^a	-.02	-.04	-.00	-.00
interaction	.04	.30**	-.24 ⁺	-.08
R ²	.03	.20**	.05	.09 ⁺
	Choices of Affiliation Options		Ratings of Affiliation Options	
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	-.13	.02	-.30*	-.02
condition ^a	.08	-.04	.09	-.04
interaction	.03	.13	.36**	.14
R ²	.02	.12	.13*	.02
	Choices of Power Options		Ratings of Power Options	
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	-.03	.14	.23 ⁺	.35**
condition ^a	-.10	-.07	-.13	-.09
interaction	-.10	.09	.21	-.08
R ²	.02	.03	.07	.11*

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Regressions of choices and ratings of all three motive options with achievement motives, decision modes and their interaction as predictors indicated that the predictor effect of implicit achievement motive was specific only to ratings of achievement options. Explicit achievement motive, on the other hand, did not only predicted ratings of achievement option, but also predicted choices of affiliation options and ratings of power options. In experiment 1, implicit achievement motive did not predict any of the dependent variable. In this experiment, we did not find significant effect of decision mode on any of the dependent variables. With regards to our hypothesis, we found very significant interaction between explicit achievement motives and choices of affiliation options. The stronger the achievement motive, the less likely it is that affiliation option was selected and this effect is accentuated in the deliberative mode. This is in-line with our hypothesis. We also found a weak negative interaction between motives and decision mode. The positive effect of explicit achievement motive on selecting achievement option is stronger in the intuitive as compared to the deliberative mode. This is in opposition to our hypothesis. What would be consistent with this finding is the idea that having stronger motives in general increases the likelihood of selecting and liking an option. What determines which option was selected is then the decision mode with deliberation accentuating the positive attribute of achievement motive and intuition accentuating the positive attribute of affiliation option.

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on implicit and explicit Affiliation motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Affiliation Motive		Explicit Affiliation Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	.10	.39**	-.28*	.17
condition ^a	.02	.03	.04	.02
interaction	.02	.21 ⁺	.04	-.03
R ²	.01	.19**	.09	.03
	Implicit Affiliation Motive		Explicit Affiliation Motive	
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	-.02	.04	.30**	.52**
condition ^a	.05	-.04	.03	-.07
interaction	-.02	.04	-.09	-.05
R ²	.00	.01	.09	.27
	Implicit Power Motive		Explicit Power Motive	
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	-.11	.16	-.06	.28
condition ^a	-.10	-.05	-.10	-.06
interaction	.00	.11	.07	-.07
R ²	.02	.04	.02	.08

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Standardized regression coefficients for regressions of choices and ratings of achievement, affiliation, and power options on implicit and explicit Power motives, condition (deliberative vs. intuitive), and their interaction.

	Implicit Power Motive		Explicit Power Motive	
	Choices of Achievement Options	Ratings of Achievement Options	Choices of Achievement Options	Ratings of Achievement Options
motive	-.09	.28*	-.11	.19
condition ^a	.01	.05	.02	.03
interaction	-.09	.14	-.03	-.06
R ²	.02	.11*	.01	.04
	Implicit Power Motive		Explicit Power Motive	
	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Affiliation Options	Ratings of Affiliation Options
motive	.07	.21 ⁺	-.05	.18
condition ^a	.05	-.03	.05	-.05
interaction	.02	.12	.04	.03
R ²	.01	.06	.01	.03
	Implicit Power Motive		Explicit Power Motive	
	Choices of Power Options	Ratings of Power Options	Choices of Power Options	Ratings of Power Options
motive	.02	.22 ⁺	.23 ⁺	.35**
condition ^a	-.10	-.04	-.11	-.06
interaction	.10	.12	-.01	.01
R ²	.02	.07	.06	.13*

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^a 1 = intuitive mode, 2 = deliberative mode

Appendix C.4 Summary of Mismatch Regressions for Experiment 4

Standardized regression coefficients for regressions with implicit (PSE) and explicit motives (UMS) entered simultaneously to predict choices and ratings of the corresponding choice options (N = 67).

	Choices of Achievement Options	Ratings of Achievement Options	Choices of Affiliation Options	Ratings of Affiliation Options	Choices of Power Options	Ratings of Power Options
Achievement						
PSE- Achievement	.14	.03	.09	.09	.03	.11
UMS-Achievement	.18	.38**	.13	.31*	.22+	.40**
R ²	.06	.15**	.03	.11*	.05	.18**
Affiliation						
PSE- Affiliation	-.03	-.08	.07	-.01	-.14	-.06
UMS-Affiliation	.13	.33**	.52**	.68**	.31*	.47**
R ²	.02	.11*	.29**	.46**	.10*	.21**
Power						
PSE- Power	-.02	-.07	-.05	-.12	-.04	-.08
UMS-Power	-.10	.01	.08	.06	.24 ⁺	.45**
R ²	.01	.01	.01	.02	.06	.23**

+ p < .10, * p < .05, ** p < .01 (two-tailed)

Appendix D: Alternative Moderator Variable

Standardized regression coefficients for regressions of motive-related choices and ratings of choice options on the corresponding implicit and explicit motives, preference for intuition and deliberation (PID), and their interaction.

	Implicit Motive		Explicit Motive	
	Choices	Ratings	Choices	Ratings
Achievement– Hope for Success	Achievement Option	Achievement Option	Achievement Option	Achievement Option
motive	.20 ⁺	.07	-.05	.23 ⁺
PID ^a	.36**	.24 ⁺	.33**	.20
motive x PID	-.02	.16	.24*	.24*
R ²	.16	.09	.18**	.17*
Affiliation– Hope for Affiliation	Affiliation Option	Affiliation Option	Affiliation Option	Affiliation Option
motive	-.05	-.06	.32**	.42**
PID ^a	-.26 ⁺	-.21	-.15	-.12
motive x PID	-.03	.03	-.19	-.15
R ²	.07	.06	.21**	.26**
Power– Hope for Control	Power Option	Power Option	Power Option	Power Option
motive	.19	.32*	.30*	.51**
PID ^a	-.01	.02	-.06	-.05
motive x PID	-.06	-.02	-.10	-.14
R ²	.04	.10 ⁺	.11 ⁺	.30**

+ p < .10, * p < .05, ** p < .01 (two-tailed)

^aPID = preference for deliberation – preference for intuition

Appendix E: Decision Task Instructions for Experiment 2

Intuitive Condition

In dieser Untersuchung interessiert uns besonders, welchen Einfluss spontanes Entscheiden - also eine intuitive, gefühlbasierte Herangehensweise - auf Entscheidungsprozesse hat.

Aktuelle Forschungen zeigen, dass Intuition hilfreich beim Treffen von Entscheidungen sein kann. Im Gegensatz dazu führt ein Ignorieren intuitiver Tendenzen eher dazu, dass Entscheidungen später bereut oder als unpassend empfunden werden.

In diesem Versuch werden wir Ihnen verschiedene Entscheidungssituationen mit drei Antwortmöglichkeiten vorgeben. Versuchen Sie, sich jede der möglichen Situationen bildlich und lebhaft vorzustellen. Malen Sie sich für jede der drei möglichen Optionen aus, wie es wäre, wenn Sie die Situation selbst erleben würden. Achten Sie besonders darauf, welche Gefühle in der jeweiligen Situation bei Ihnen entstehen würden.

Im Anschluss bewerten Sie bitte alle Situationen und entscheiden Sie sich im letzten Schritt für eine der Optionen. Bitte berücksichtigen Sie dabei keine anderen Faktoren sondern lediglich, wie Sie sich in der Situation fühlen würden.

Stellen Sie sich die jeweiligen Situationen vor und entscheiden Sie, ob sie für Sie angenehm wäre oder nicht. Bitte vertrauen Sie immer Ihrem ersten Eindruck (Gefühl) und antworten Sie, ohne tiefgründig über die Frage nachzudenken. Seien Sie Sie selbst so gut es geht.

Deliberative Condition

In dieser Untersuchung interessiert uns besonders, welchen Einfluss genaues Nachdenken - also eine kühle, rationale Herangehensweise - auf Entscheidungsprozesse hat.

Aktuelle Forschungen zeigen, dass genaues Überlegen hilfreich beim Treffen von Entscheidungen sein kann. Im Gegensatz dazu führt ein Mangel an Nachdenken eher dazu, dass Entscheidungen später bereut werden oder als unpassend empfunden werden.

In diesem Versuch werden wir Ihnen verschiedene Entscheidungssituationen mit drei Antwortmöglichkeiten vorgeben. Denken Sie genau darüber nach, ob es sich um eine gute oder eine schlechte Option handelt. Im Anschluss bewerten Sie bitte alle Situationen und entscheiden Sie sich im letzten Schritt für eine der Optionen.

Denken Sie bitte sorgfältig darüber nach, was andere von Ihnen denken würden, wenn Sie die jeweilige Option wählen, zum Beispiel Ihre Freunde, Ihre Familie, Ihre Bekannten oder Menschen, die Sie noch nicht kennen. Überlegen sie, inwieweit die Entscheidung Sie in Zukunft beeinflussen würde und welche Konsequenzen sich daraus ergeben.

Nehmen Sie sich Zeit und denken sie objektiv darüber nach, ob die Entscheidungsmöglichkeiten gut oder schlecht sind, ob Sie die jeweilige Option wählen sollten oder nicht.

Appendix F: Experiment 3

Appendix F.1 Decision Task Instructions for Experiment 3

Intuitive Condition

In dieser Untersuchung interessiert uns besonders, welchen Einfluss spontanes Entscheiden - also eine intuitive, gefühlsbasierte Herangehensweise - auf Entscheidungsprozesse hat.

Aktuelle Forschungen zeigen, dass Intuition hilfreich beim Treffen von Entscheidungen sein kann. Im Gegensatz dazu führt ein Ignorieren intuitiver Tendenzen eher dazu, dass Entscheidungen später bereut oder als unpassend empfunden werden.

In diesem Versuch werden wir Dir verschiedene Entscheidungssituationen mit drei Antwortmöglichkeiten vorgeben. Versuche, Dir jede der möglichen Situationen bildlich und lebhaft vorzustellen. Male Dir für jede der drei möglichen Optionen aus, wie es wäre, wenn Du die Situation SELBST ERLEBEN würdest. Achte besonders darauf, welche GEFÜHLE in der jeweiligen Situation bei Dir entstehen würden.

Im Anschluss bewerte bitte alle Situationen und entscheide Dich im letzten Schritt für eine der Optionen. Bitte berücksichtige dabei keine anderen Faktoren sondern lediglich, wie Du Dich in der Situation fühlen würdest.

Stelle Dir die jeweiligen Situationen vor und entscheide, ob sie für Dich angenehm wäre oder nicht. Bitte vertraue immer deinem ersten Eindruck (Gefühl) und antworte, ohne tiefgründig über die Frage nachzudenken. Sei Du selbst.

Deliberative Condition

In dieser Untersuchung interessiert uns besonders, welchen Einfluss genaues Nachdenken - also eine kühle, rationale Herangehensweise - auf Entscheidungsprozesse hat.

Aktuelle Forschungen zeigen, dass genaues Überlegen hilfreich beim Treffen von Entscheidungen sein kann. Im Gegensatz dazu führt ein Mangel an Nachdenken eher dazu, dass Entscheidungen später bereut werden oder als unpassend empfunden werden.

In diesem Versuch werden wir Dir verschiedene Entscheidungssituationen mit drei Antwortmöglichkeiten vorgeben. Denke genau darüber nach, ob es sich um eine gute oder eine schlechte Option handelt. Im Anschluss bewerte bitte alle Situationen und entscheide Dich im letzten Schritt für eine der Optionen.

Denke bitte sorgfältig darüber nach, WAS ANDERE VON DIR DENKEN WÜRDEN, wenn Du die jeweilige Option wählst, zum Beispiel deine Freunde, deine Familie, deine Bekannten oder fremde Menschen. Überlege dir, inwieweit die Entscheidung Dich in Zukunft beeinflussen würde und WELCHE KONSEQUENZEN SICH DARAUS ERGEBEN.

Nimm Dir Zeit und denke objektiv darüber nach, ob die Entscheidungsmöglichkeiten gut oder schlecht sind, ob Du die jeweilige Option wählen solltest oder nicht.

Appendix F.2 Implicit Association Test Material for Experiment 3

Labels:

Attribute 1 = "MAG ICH"

Attribute 2 = "MAG ICH NICHT"

Stimuli:

Attribute 1 = NETT, FREUNDLICH, GROSSARTIG

Attribute 2 = FEINDSELIG, LÄSTIG, BÖSE

Personalized Attribute = EMOTIONAL, RUHIG, EHRGEIZIG,
SELBSTBEWUSST, SCHÜCHTERN, SPARSAM

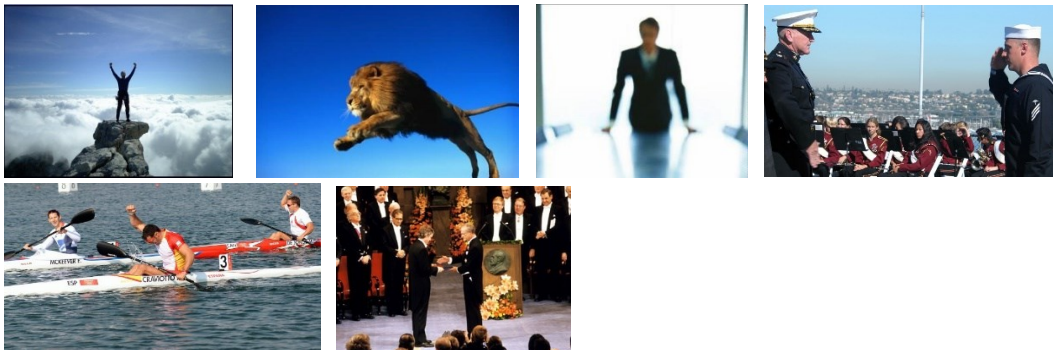
Labels:

Target1 = "Überlegenheit"

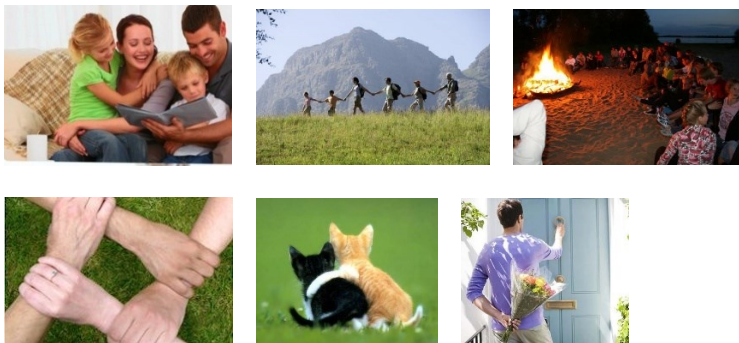
Target2 = "gute Beziehung"

Stimuli:

Target 1 =



Target 2 =



Appendix G: Experiment 4

Appendix G.1 Implicit Association Test Material for Experiment 4

Labels:

Attribute 1 = "Ich will"

Attribute 2 = "Ich will nicht"

Stimuli:

Attribute 1 = Glück, Liebe, Freude, Zufriedenheit,
Stolz, Spass, Hoffnung, Respekt

Attribute 2 = Trauer, Enttäuschung, Ärger, Langeweile
Verzweiflung, Frust, Stress, Bedauern

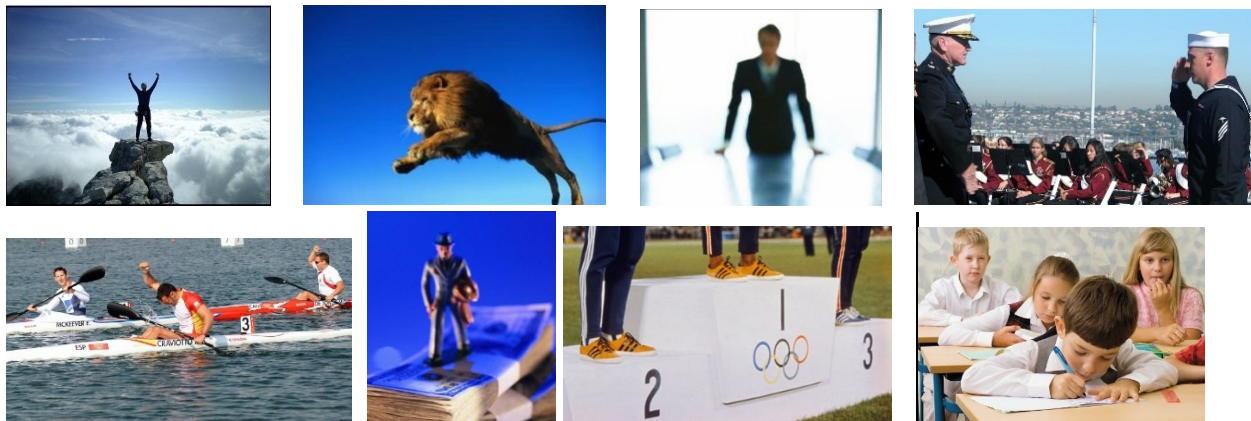
Labels:

Target1 = "Leistung und Kraft"

Target2 = "Beziehung und Sympathie"

Stimuli:

Target 1 =



Target 2 =



Appendix G.2 Picture Story Exercise (*McClelland, Atkinson, Clark & Lowell, 1953; Winter, 1994; Schultheiss & Pang, 2007*)

Instructions

In der Bildgeschichten-Übung wird es deine Aufgabe sein, zu insgesamt sechs Bildern je eine vollständige Geschichte zu schreiben. Eine fantasievolle Geschichte mit einem Anfang, einem Hauptteil und einem Schluss. Versuche zu schildern, wer die Menschen auf dem jeweiligen Bild sind, was diese fühlen, denken und welche Wünsche sie haben. Versuche zu erzählen, wie es zu der Situation kam, die auf dem Bild dargestellt ist, und wie die Geschichte zu Ende geht. Bitte schreibe deine Geschichte in das leere Fenster, das du auf dem Bildschirm siehst. Unter dem Fenster stehen zudem einige hilfreiche Fragen. Diese solltest du nur als Hilfestellung für das Verfassen deiner Geschichte betrachten. Du musst diese Fragen NICHT speziell beantworten. Falls du schon einmal Geschichten zu diesen Bildern geschrieben haben solltest, kannst du entweder die gleichen Geschichten noch einmal schreiben oder dir neue Geschichten dazu ausdenken.

Jedes Bild wird dir 10 Sekunden lang gezeigt. Nachdem es verschwunden ist, schreibe bitte einfach die Geschichte, die dir dazu in den Sinn kommt. Grammatik, Rechtschreibung oder Zeichensetzung spielen hierbei keine Rolle. Du wirst für jede Geschichte etwa vier Minuten Zeit haben; der Computer wird dich wissen lassen, wenn nur noch 20 Sekunden verbleiben. Falls du weniger als vier Minuten brauchst, kann der Computer schon nach drei Minuten mit dem nächsten Bild weitermachen.

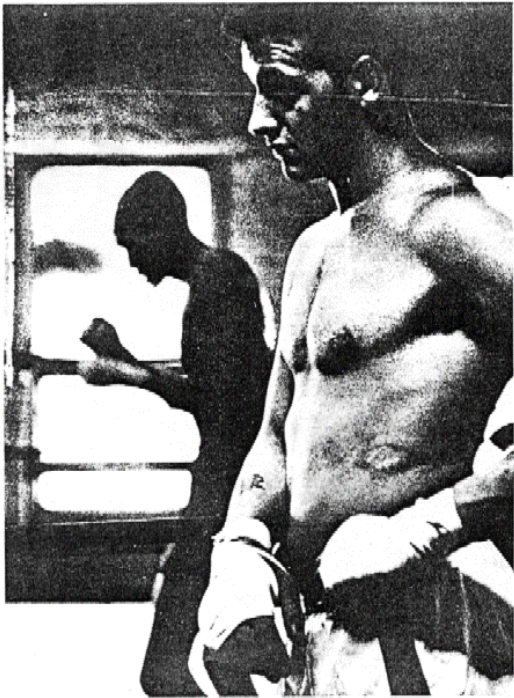
Accompanying Questions

Was passiert gerade? Wer sind die Personen? Was passierte vorher? Worüber denken die Personen nach, was fühlen sie? Was wollen sie? Was wird als nächstes passieren? Wie geht die Geschichte aus?

PSE Picture 1. Bicycle Race



PSE Picture 2. A Boxer



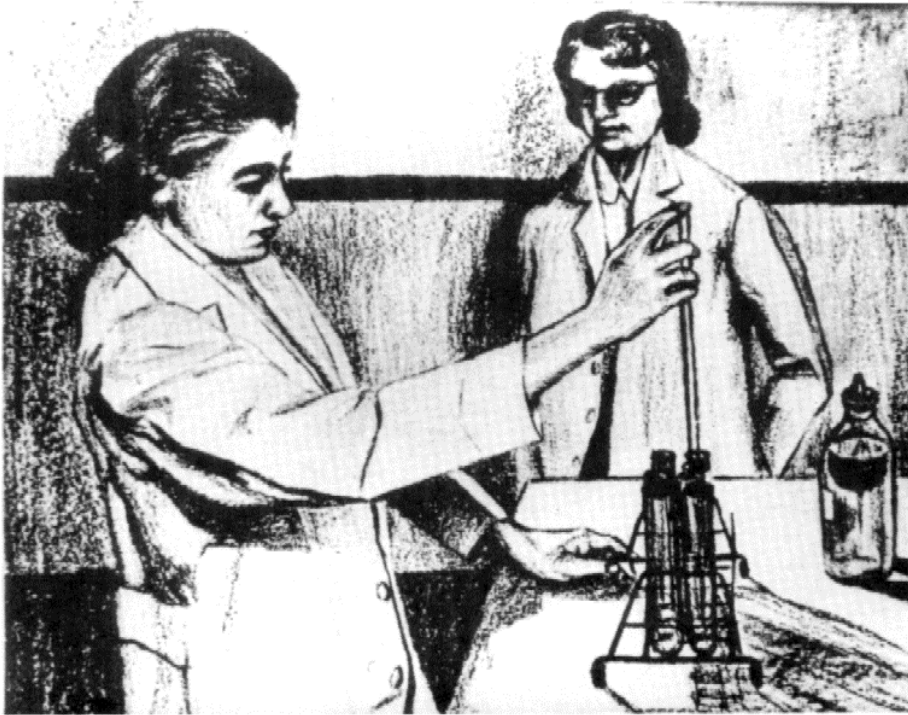
PSE Picture 3. Couple by the River



PSE Picture 4. Ship Captain



PSE Picture 5. Women in Laboratory



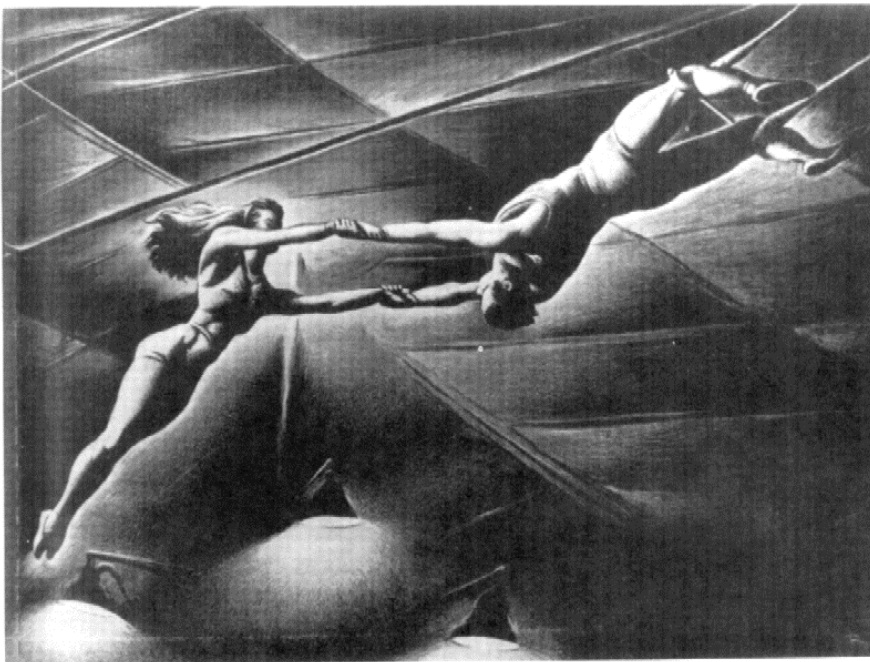
PSE Picture 6. Nightclub Scene



PSE Picture 7. Friends in a café



PSE Picture 8. Trapeze Artist



Appendix H: Correlations between Implicit and Explicit Motives on Choices and Ratings of Motive Options across Intuitive and Deliberative Conditions in Four Studies

EXP.	Decision Mode	DV	Implicit/ Explicit	Motives	Options	Correlations
EXP. 1	INTUITIVE	Choice	Implicit		Ach	.01
				Ach	Aff	.06
					Pow	-.14
				Aff	Ach	.09
				Aff	Aff	-.03
					Pow	.07
				Pow	Ach	-.02
					Aff	.04
					Pow	-.01
			Explicit		Ach	-.06
				Ach	Aff	-.15
					Pow	.24
				Aff	Ach	-.64**
				Aff	Aff	.46**
					Pow	.15
				Pow	Ach	-.32 ⁺
				Pow	Aff	.16
					Pow	.21
		Rating	Implicit		Ach	-.09
				Ach	Aff	.04
					Pow	-.03
				Aff	Ach	-.05
				Aff	Aff	.02
					Pow	-.08
				Pow	Ach	-.20
					Aff	-.10
					Pow	.05
			Explicit		Ach	.24
				Ach	Aff	.25
					Pow	.45**
				Aff	Ach	-.02
				Aff	Aff	.54**
					Pow	.47**
				Pow	Ach	-.24
				Pow	Aff	.26
					Pow	.57**

EXP.	Decision Mode	DV	Implicit/ Explicit	Motives	Options	Correlations
EXP 1	DELIBERATIVE	Choice	Implicit		Ach	.28
				Ach	Aff	-.18
					Pow	.03
				Aff	Ach	.12
				Aff	Aff	-.09
					Pow	.08
				Pow	Ach	.22
				Pow	Aff	-.33 ⁺
					Pow	.35*
			Explicit		Ach	.06
				Ach	Aff	-.13
					Pow	.41*
				Aff	Ach	-.22
				Aff	Aff	.32 ⁺
					Pow	-.04
				Pow	Ach	.15
				Pow	Aff	-.29
					Pow	.41*
		Rating	Implicit		Ach	.17
				Ach	Aff	-.27
					Pow	.23
				Aff	Ach	.01
				Aff	Aff	-.13
					Pow	.29
				Pow	Ach	.00
				Pow	Aff	-.17
					Pow	.47**
			Explicit		Ach	.22
				Ach	Aff	-.05
					Pow	.28
				Aff	Ach	-.02
				Aff	Aff	.41*
					Pow	.24
				Pow	Ach	.15
				Pow	Aff	-.26
					Pow	.51**

EXP.	Decision Mode	DV	Implicit/Explicit	Motives	Options	Correlations		
EXP. 2	INTUITIVE	Choice	Implicit	Ach	Ach	-		
					Aff	-		
					Pow	-		
				Aff	Ach	-		
					Aff	-		
					Pow	-		
				Pow	Ach	.10		
					Aff	.03		
					Pow	-.15		
				Explicit	Ach	Ach	.19	
						Aff	-.43**	
						Pow	.27 ⁺	
					Aff	Ach	-.24	
						Aff	.14	
						Pow	.03	
			Pow		Ach	.08		
					Aff	-.33*		
					Pow	.26 ⁺		
			Rating		Implicit	Ach	Ach	-
							Aff	-
							Pow	-
				Aff		Ach	-	
						Aff	-	
						Pow	-	
				Pow		Ach	-.22	
						Aff	-.14	
						Pow	-.06	
Explicit	Ach	Ach		.41**				
		Aff		.02				
		Pow		.23				
	Aff	Ach	.01					
		Aff	-.03					
		Pow	.35*					
	Pow	Ach	.31					
		Aff	-.14					
		Pow	.48**					

EXP.	Decision Mode	DV	Implicit/ Explicit	Motives	Options	Correlations
EXP. 2	DELIBERATIVE	Choice	Implicit		Ach	-
				Ach	Aff	-
					Pow	-
					Ach	-
				Aff	Aff	-
					Pow	-
					Ach	-.01
				Pow	Aff	.24
					Pow	-.30 ⁺
			Explicit		Ach	-.09
				Ach	Aff	.09
					Pow	.08
					Ach	-.14
				Aff	Aff	.18
					Pow	.09
					Ach	-.33*
				Pow	Aff	.21
					Pow	.19
		Rating	Implicit		Ach	-
				Ach	Aff	-
					Pow	-
					Ach	-
				Aff	Aff	-
					Pow	-
					Ach	.28
				Pow	Aff	.35*
					Pow	.26
			Explicit		Ach	.03
				Ach	Aff	.30 ⁺
					Pow	.39*
					Ach	.11
				Aff	Aff	.35*
					Pow	.37*
					Ach	-.22
				Pow	Aff	.30 ⁺
					Pow	.53**

EXP.	Decision Mode	DV	Implicit/Explicit	Motives	Options	Correlations		
EXP. 3	INTUITIVE	Choice	Implicit	Ach	Ach	.12		
					Aff	-.15		
					Pow	.08		
				Aff	Ach	.08		
					Aff	.00		
					Pow	-.13		
				Pow	Ach	.00		
					Aff	.05		
					Pow	-.08		
				Explicit	Ach	Ach	.30 ⁺	
						Aff	-.45**	
						Pow	.37*	
					Aff	Ach	-.30 ⁺	
						Aff	.32*	
						Pow	-.14	
					Pow	Ach	-.08	
						Aff	-.08	
						Pow	.27 ⁺	
			Rating		Implicit	Ach	Ach	.07
							Aff	-.11
							Pow	.04
						Aff	Ach	.19
							Aff	.00
							Pow	.05
						Pow	Ach	.13
							Aff	.07
							Pow	.09
				Explicit		Ach	Ach	.31 ⁺
							Aff	-.11
							Pow	.31 ⁺
						Aff	Ach	.18
							Aff	.47**
							Pow	.32 ⁺
						Pow	Ach	.26
							Aff	.15
							Pow	.35

EXP.	Decision Mode	DV	Implicit/ Explicit	Motives	Options	Correlations
EXP. 3	DELIBERATIVE	Choice	Implicit		Ach	.19
				Ach	Aff	-.10
					Pow	-.12
					Ach	.12
				Aff	Aff	-.04
					Pow	-.10
					Ach	-.19
				Pow	Aff	.11
					Pow	.11
			Explicit		Ach	-.10
				Ach	Aff	.09
					Pow	.02
					Ach	-.26
				Aff	Aff	.26
					Pow	.01
					Ach	-.13
				Pow	Aff	-.01
					Pow	.20
		Rating	Implicit		Ach	.62**
				Ach	Aff	.16
					Pow	.22
					Ach	.57**
				Aff	Aff	.09
					Pow	.27
					Ach	.44**
				Pow	Aff	.38*
					Pow	.36*
			Explicit		Ach	.28 ⁺
				Ach	Aff	.15
					Pow	.33
					Ach	.15
				Aff	Aff	.57**
					Pow	.23
					Ach	.12
				Pow	Aff	.21
					Pow	.35*

EXP.	Decision Mode	DV	Implicit/Explicit	Motives	Options	Correlations		
EXP. 4	INTUITIVE	Choice	Implicit	Ach	Ach	.16		
					Aff	.10		
					Pow	.06		
				Aff	Ach	.00		
					Aff	.18		
					Pow	.07		
				Pow	Ach	.01		
					Aff	-.07		
					Pow	-.10		
				Explicit	Ach	Ach	.20	
						Aff	.14	
						Pow	.23 ⁺	
					Aff	Ach	.13	
						Aff	.53**	
						Pow	.28*	
					Pow	Ach	-.09	
						Aff	.09	
						Pow	.25*	
			Rating		Implicit	Ach	Ach	.07
							Aff	.12
							Pow	.15
						Aff	Ach	-.01
							Aff	.13
							Pow	.03
						Pow	Ach	-.08
							Aff	-.14
							Pow	-.20
				Explicit		Ach	Ach	.39**
							Aff	.32**
							Pow	.42**
						Aff	Ach	.31**
							Aff	.68**
							Pow	.45**
						Pow	Ach	.03
							Aff	.09
							Pow	.47**

Ayu Okvitawanli



Personal Details

Title: BCogSc. / MSc. (Psychology)
Date of birth: 6th of October, 1990
Place of birth: Yogyakarta, Indonesia

Education

06/2012-present **PhD Candidate at International Max Planck Research School** for Adapting Behaviour in A Fundamentally Uncertain World in collaboration with Department of General Psychology II, **Friedrich-Schiller-University Jena**, Germany.

08/2010-08/2011 **Master of Science (Research, Psychology)** at Erasmus University of Rotterdam (average grade: 7.98, equivalent to “A”, or classification “First”) Specialization: Brain and Cognition.

07/2011 Psychology of Entrepreneurship, summer course, (Scholarship by the European Union) at Vysoká škola ekonomická, Prague, July 2011 (grade: A)

06/2007-06/2010 **Bachelor of Cognitive Science** at The University of Hong Kong (**Dean’s Honour List**)

06/2008 -06/2009 **Exchange Programme** at The University of Auckland (average mark: A)
Awards: Senior Prize in Psychology, Certificate of Distinction in Data Analysis, Salutory Letter in Philosophy, Annual Prize in Marine Science, HKU Worldwide Undergraduate Student Exchange Scholarship

06/2006-06/2007 **High school** at Grattan Academic High School, Michigan, United States
Average mark: A, placed in an **acceleration programme** (graduated at 16), High School Exchange Scholarship by EF English course, ranked 1ST from Indonesia.

Work Experience

09/2011 – 05/2012 **Executive Staff at Malaysia Practice Enterprise Center, Kuala Lumpur**, Malaysia. MyPEC aims at incorporating business knowledge and how-to-do sense in potential entrepreneurs and business executives through **learning-by-doing** curriculum.

06/2009 - present **Co-founder and programme coordinator** of Cultural Diversity Ambassador. Students’ initiated service learning programme, funded by The University of Hong Kong. It aims at cultural exchange and service to humanity. **Past activities:** Padang Earthquake Aftermath (March 2010), The University of Hong Kong Free Hugs day (April 2010), Tsunami Aftermath (June-July 2010), Nepal Stove-stone Technology Sharing (October 2010), Empathy training with Crossroad International (since 2009).

- 06/2009-12/2009 **International student admission staff** (10 hrs/week) at University of Hong Kong.
- 01/2009-06/2009 **Information centre and IT help desk staff** (12 hrs/week) at University of Auckland.
- 10/2008-06/2009 **Waiter and staff** (8 hrs/week) at SUBWAY sandwich in Auckland
- 2006 Part-time **writer** for commercial magazines
- 2001 Youngest **Novelist** of Indonesia by **Museum Record of Indonesia**, 2001
- Published a teenage fiction novel. Books can be found in commercial bookstores.

Student Activities

Conferences:

- 11/2011 Global Peace Festival Convention, Seoul, South Korea
- 05/2011 Bilingualism and Language Acquisition Master Course, Leiden University
- 02/2011 Google Workshop on Creativity, Erasmus University
- 05/2009 Model United Nation in Hong Kong (on Intellectual Property Rights)
- 06/2009 Model United Nation in Taiwan (on Proliferation of International Treaties)

Leadership/Mentorship:

- 06/2010-06/2011 University of Hong Kong **International Student Ambassador** (full-time)
- Representing HKU during visits by international organizations
- 02/2008-06/2008 Junior Achievement Programme (10 x 2hr sessions, as Teacher)
- 02/2008-06/2008 High School Mentorship Programme (5 x 2hr sessions, as Mentor)

Community Services:

- 2008 – 2009 Treasurer of **Habitat for Humanity** (full-time)
- 2007 – 2008 Transformational Social Leadership Programme I & II (2hrs/week)
- 2006 – 2007 Volunteers at Green House Elderly Housing (10 x 2hr sessions)
- 2005 – 2006 **International Award for Young People**
- Completed 120 hours of service work and year-round survival training.

Language	Speak	Understand	Read	Write
Indonesian	Native	Native	Native	Native/Published Writer
English (IELTS: 8.5)	Very good	Perfect	Perfect	Very good/Good writing style
German (B2)	Good	Good	Good	Basic
Chinese (Mandarin)	Good	Good	None	None

Computer skills Fluent in Excel, Word, Power Point, SPSS, E-prime. Basic: Photoshop, C++
Hobbies Travelling, experiencing new cultures, psychology, swimming, hiking

Ort, Datum

Unterschrift

Publications

Manuscripts

Okvitawanli, A., Rothermund, K., & Kattlun, F. (2015). Implicit Measure of Implicit Motives: Wanting IAT as a Measure of Implicit Motives. (Bachelor Thesis supervision). FSU Jena.

Gaudeul, A., Okvitawanli, A., & Panganiban, M. (2015). Reverse Discrimination. Does It Exist? (Working Paper). IMPRS Uncertainty, FSU Jena.

Camp, G., Huijdig, J. &, Okvitawanli, A. (2011). Can Retrieval-induced Forgetting changes Affective Evaluation? Master Thesis. Erasmus University of Rotterdam, the Netherlands.

Hayward, W. & Okvitawanli, A. (2010). Holistic Processing in Face Recognition across Races: The Complete Method. Bachelor Thesis. The University of Hong Kong.

Conference Contributions

Okvitawanli, A. (2014, December). Asking Without Asking: Implicit Measure in Psychology. Presentation held at the President University Invited Lecture, Jakarta, Indonesia.

Okvitawanli, A. (2014, August). Moderating Role of Intuition/Deliberation in Predicting Implicit/Explicit Motives Choice Congruent. Poster Presentation held at the 28th Conference of the European Health Psychology Society, Innsbruck, Austria.

Okvitawanli, A. (2014, July). Moderating Role of Intuition/Deliberation in Predicting Implicit/Explicit Motives Choice Congruent. Presentation held at the 11th Workshop of the Fachgruppe Sozialpsychologie for doctoral students of Social Psychology (SoDoc), Friedrichshafen, Germany.

Ehrenwörtliche Erklärung

Hiermit erkläre ich, dass mir die geltende Promotionsordnung der Fakultät für Sozial- und Verhaltenswissenschaften der Friedrich-Schiller-Universität Jena bekannt ist. Ich habe die Dissertation selbst angefertigt und habe keine Textabschnitte eines Dritten oder eigener Prüfungsarbeiten ohne Kennzeichnung übernommen. Alle von mir benutzten Hilfsmittel, persönliche Mitteilungen und Quellen habe ich angegeben. Ich habe nicht die Hilfe eines Promotionsberaters in Anspruch genommen und Dritte haben weder unmittelbar noch mittelbar geldwerte Leistungen von mir für Arbeiten erhalten, die im Zusammenhang mit dem Inhalt der vorgelegten Dissertation stehen.

Erstbetreuer der Arbeit war Prof. Dr. Klaus Rothermund, Zweitbetreuer war Prof. Dr. Oliver Kirchkamp. Bei der Datenerhebung für die empirischen Untersuchungen wurde ich durch Hilfskräfte des Jena Graduate School „Human Behaviour in Social and Economic Change“ und der Abteilung für Allgemeine Psychologie II des Instituts für Psychologie der Friedrich-Schiller-Universität Jena unterstützt. Die Arbeit wurde weder im In- noch Ausland für eine staatliche oder andere wissenschaftliche Prüfung, oder in gleicher oder ähnlicher Form bei einer anderen Hochschule bzw. anderen Fakultät als Dissertation eingereicht. Ich versichere, dass ich nach bestem Wissen die reine Wahrheit gesagt und nichts verschwiegen habe.

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