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Summary

This thesis examines a psychological model of health and well-being from an ancient Indian philosophical thought system called the *tri-guna* model. After an introduction in the first chapter, the second chapter establishes the theoretical basis of the model. The third chapter describes the development and psychometric properties of the Tri-Guna Scales which measure the components of the *tri-guna* model. The fourth chapter presents an intervention study that is focused on an intervention that was conceptualized on the basis of the *tri-guna* model and aimed at increasing well-being, followed by the last chapter that draws conclusions.

As the second chapter illustrates, the *tri-guna* model proposes that the psyche is influenced by three energies that function in dependence on one another and each strive for dominance, pushing the other two aside when they gain strength. These three energies are called *sattva*, *rajas* and *tamas*. In short, when *sattva* is dominant in a person, the person has strong well-being, is calm, happy, motivated and persevering. Dominant *rajas* leads to stress, over-activity and restlessness. When *tamas* becomes dominant, it makes a person pessimistic, depressed and unmotivated. The implication of the *tri-guna* model is that *sattva* should be the dominant *guna* in order for a person to experience high well-being. *Sattva* can be strengthened by a number of interventions such as meditation, increasing spiritual awareness, self-regulation and developing virtues. Studies examining the *tri-guna* model have demonstrated that many of the theorized relations are supported by empirical data.

The quality of the inventories used to measure the *gunas* in the past does not meet current methodological standards, for which reason new *tri-guna* scales were developed in two studies. The inventory items were derived from the working model discussed in the second chapter of the thesis. Originally, the goal was to develop one large *tri-guna* scale that is clearly composed of three factors, of which each corresponds to one of the *gunas*. However, because of the wide range of behavioral aspects that are determined by the *gunas*, the first exploratory factor analysis found factors that corresponded not only to one of the *gunas*, but also to one of the many behavioral facets inherent in the one comprehensive scale (e.g. cognition, motivation, social behavior etc.). Therefore, the items were grouped into nine separate scales that each measure the *gunas* in one single behavioral category. The reliability of the majority of the 27 scales corresponds to reliability values of established personality inventories: Cronbach's α of 24 subscales is above .7. The internal consistencies of the other three subscales don't meet this standard, but their values are still above .6. Measures determining the validity of the inventory are very good. The exploratory factor analysis of the second study shows that all scales consist of three factors, each of which can be related to one

of the *gunas*. The correlations of the subscales amongst each other are consistent with the hypotheses and previous research, the *sattva* scales correlate negatively with the *rajas* and *tamas* scales, and the *rajas* and *tamas* scales have positive correlations. Furthermore, the correlations of the scales to relevant external criteria provide further evidence for the validity of the scales. As expected, the *sattva* scales correlate positively with measures of well-being and negatively with measures of stress, whereas the *rajas* and *tamas* scales correlate positively with measures of stress and negatively with measures of well-being.

The *tri-guna* model not only aims at describing and explaining behavior, but also at changing it, so that well-being can increase. The fourth chapter of this thesis describes an intervention study that tested a training aimed at increasing *sattva* and decreasing *rajas* and *tamas*, in a multiple baseline study. 24 participants took part in an eight-week training which included a variety of the interventions detailed in the second chapter: meditation, cognitive restructuring, managing energy and will-power, and mindful decision-making and social behavior. The study results show that the training was effective: *sattva* increased and *rajas* and *tamas* decreased with medium to large effects. Other significant changes include an increase in psychological and physical well-being and self-regulation.

All in all, this thesis demonstrates the potential of the contribution of the *guna* model to explaining and increasing well-being. This research provides a thorough description of the model and summary of empirical evidence in connection to the *gunas*. Furthermore, this work has made it possible to measure the *gunas* with a questionnaire of high academic standards. This will support future research on the *gunas* and other fields investigating interventions with an Indian background like meditation or yoga. Finally, this thesis shows how the *guna* model can be applied practically in a psychological training in order to improve the well-being of its participants.

Zusammenfassung

Diese Dissertation untersucht ein psychologisches Modell für Gesundheit und Wohlbefinden aus der indischen Philosophie, genannt das Tri-Guna Modell. Nach einer Einleitung im ersten Kapitel, beschreibt das zweite Kapitel die theoretischen Grundlagen des Modells. Das dritte Kapitel beschreibt die Entwicklung und psychometrischen Eigenschaften der Tri-Guna Skalen, welche die Komponenten des Tri-Guna Modells messen. Im vierten Kapitel wird eine Interventionsstudie dargestellt, die ein Training untersucht, das auf der Grundlage des Tri-Guna Modells entworfen wurde und darauf abzielt Wohlbefinden zu stärken. Im Anschluss folgt das letzte Kapitel, in welchem Schlussfolgerungen und ein Ausblick dargestellt werden.

Wie das zweite Kapitel darstellt, wird die Psyche laut dem Tri-Guna Modell von drei Energien beeinflusst, die in Abhängigkeit voneinander arbeiten. Jede strebt nach Stärke und verringert die Auswirkung der anderen beiden, wenn sie an Kraft zunimmt. Diese drei Energien heißen Sattva, Rajas und Tamas. Kurz gefasst erfährt eine Person Wohlbefinden, Ruhe, Glück, Motivation und Ausdauer, wenn Sattva am stärksten ist. Vorherrschendes Rajas führt zu Stress, übermäßiger Aktivität und Ruhelosigkeit. Wenn Tamas vorherrscht, ist die Person pessimistisch, depressiv und unmotiviert. Insgesamt erfährt eine Person das höchste Ausmaß an Wohlbefinden, wenn Sattva die stärkste Guna ist. Laut Tri-Guna Modell kann Sattva durch verschiedene Maßnahmen gestärkt werden, wie zum Beispiel Meditation, spirituelle Bewusstheit, Selbstregulation und das Umsetzen von Tugenden. Studien, welche das Tri-Guna Modell untersucht haben, konnten zeigen, dass viele der in dem Modell beschriebenen Beziehungen von empirischen Daten belegt werden.

Die Qualität der bisher vorhandenen Inventare zur Erfassung der Gunas wird gängigen methodischen Ansprüchen nicht gerecht, weshalb in zwei Studien neue Tri-Guna Skalen entwickelt wurden. Die Items des Inventars wurden aus dem Arbeitsmodell, das im zweiten Kapitel der Disseration dargestellt wird, abgeleitet. Zuerst war das Ziel eine umfangreiche Tri-Guna Skala zu entwickeln, die aus drei Faktoren besteht, von denen jeder einer der Gunas entspricht. Aufgrund der großen Bandbreite an Verhaltensaspekten, die von den Gunas beeinflusst werden, zeigte die erste exploratorische Faktorenanalyse mehrere Faktoren, die nicht nur einzelnen Gunas entsprachen, sondern sich auch auf Teilaspekte der Gunas in bestimmten Verhaltenskategorien bezogen, die alle in der einen umfangreichen Skala enthalten waren (z.B. Kognition, Motivation, Umgang mit anderen etc.). Deshalb wurden die Items auf neun separate Skalen aufgeteilt, die jede die Gunas in einer einzigen Verhaltenskategorie messen. Die Reliabilität von 24 der 27 Subskalen entspricht den Reliabilitätswerten von etablierten Persönlichkeitsinventaren – Cronbachs α dieser Skalen ist

über .7. Die inneren Konsistenzen der anderen drei Skalen werden diesem Wert nicht gerecht, ihre Werte sind jedoch über .6. Maße, welche die Validität der Skalen untersuchen, zeigen gute Werte. Die exploratorische Faktorenanalyse der zweiten Studie zeigt, dass die Items aller Skalen jeweils auf drei Faktoren laden, von denen jeder einer der Gunas zugeordnet werden kann. Die Korrelationen der Subskalen untereinander sind hypothesenkonform und entsprechen dem Bild, das sich auch bei älteren Guna-Inventaren zeigt – die Sattva-Skalen korrelieren negativ mit den Rajas- und Tamas-Skalen und die Rajas- und Tamas-Skalen korrelieren positiv. Desweiteren belegen Korrelationen der Skalen mit relevanten Außenkritieren die Validität der Skalen. Wie erwartet korrelieren die Sattva-Skalen positiv mit Maßen für Wohlbefinden und negativ mit Maßen für Stress, während die Rajas- und Tamas-Skalen positiv mit Maßen für Stress und negativ mit Maßen für Wohlbefinden korrelieren.

Das Tri-Guna Modell zielt nicht nur darauf ab Verhalten zu beschreiben und zu erklären, sondern auch darauf es zu ändern, damit das Wohlbefinden zunehmen kann. Das vierte Kapitel dieser Dissertation beschreibt eine Interventionsstudie, die im Rahmen eines Multiple Baseline Designs ein Training untersucht, welches Sattva stärken und Rajas und Tamas mindern sollte. 24 Teilnehmer/innen nahmen an einem acht-wöchigem Training teil, das eine Zusammenstellung der Interventionen enthielt, welche im zweiten Kapitel beschrieben wurden: Meditation, kognitive Umstrukturierung, Energie- und Willenskraft-Management, und achtsames Entscheiden und Verhalten gegenüber anderen. Die Ergebnisse der Studie zeigen, dass das Training wirksam war: Sattva nahm zu und Rajas und Tamas nahmen ab mit mittleren bis starken Effekten. Andere signifikante Veränderungen schließen eine Zunahme an psychischem und körperlichem Wohlbefinden und Selbstregulation ein.

Insgesamt demonstriert diese Dissertation den potentiellen Beitrag des Guna-Modells zur Erklärung und Stärkung von Wohlbefinden. Diese Arbeit liefert eine detaillierte Beschreibung des Modells und eine Zusammenfassung des empirischen Forschungsstandes in Bezug auf die Gunas. Desweiteren macht diese Forschung es nun möglich die Gunas mit Skalen von hohem akademischem Niveau zu messen. Das wird zukünftige Forschung zu den Gunas und anderen Themen, die Interventionen mit indischem Hintergrund untersuchen, wie Mediation oder Yoga, unterstützen. Schließlich zeigt diese Dissertation wie das Guna Modell in einem psychologischen Training praktisch angewandt werden kann, um das Wohlbefinden der Teilnehmer/innen zu stärken.

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1. Introduction

Amongst the 110 determinants for disability-adjusted life years (DALYs) that were assessed by the World Health Organization (WHO), psychological diseases and diseases which can be influenced crucially by changeable factors of behavior are in the lead of the ten main determinants in European, Asian and American regions (WHO, 2008). Changeable factors of behavior can influence the development of physical diseases like heart attack, stroke, migraine or asthma. The prevention of psychological diseases and diseases strongly influenced by behavior is becoming more and more important.

Research confirms that the risk for disease is reduced by psychological well-being (Ryff, 2014). This fact has caused researchers to investigate psychological well-being – wanting to define what it is, how it arises and how it can be strengthened and maintained.

1.1 Models of Well-Being

Western academic research models of well-being are often categorized according to their focus either on *hedonic* or *eudaimonic* well-being. Hedonic models of well-being address happiness or subjective well-being. According to Diener (Diener & Lucas, 1999), a person with high subjective well-being frequently experiences positive emotions, rarely has negative emotions and appraises his or her life as satisfactory. Therefore, subjective well-being consists of an affective component (positive and negative emotions) and a cognitive component (appraisal of life-satisfaction).

On the other hand, eudaimonic models of well-being build on the premise that well-being results from pursuing positive goals. Ryff (2014) formulated a model of psychological well-being in the 1980s in order to explicitly address *eudaimonia*, Aristotele's term for the highest human good. According to Aristotele, the greatest human goal is not feeling good, but striving to develop the best version of ourselves, realizing one's potential. Ryff (Ryff & Singer, 2008) integrated different perspectives from western psychology on human growth on what it means to be fully functioning and well (e.g. Jung, Erikson, Allport, Rogers, Maslow etc.) into a model of six dimensions of psychological well-being. These six dimensions (see Figure 1) are purpose in life, environmental mastery, positive relationships, personal growth, autonomy and self-acceptance. Clearly, this approach offers distinctly different indicators for psychological well-being than those of models focused on positive emotions and life satisfaction.

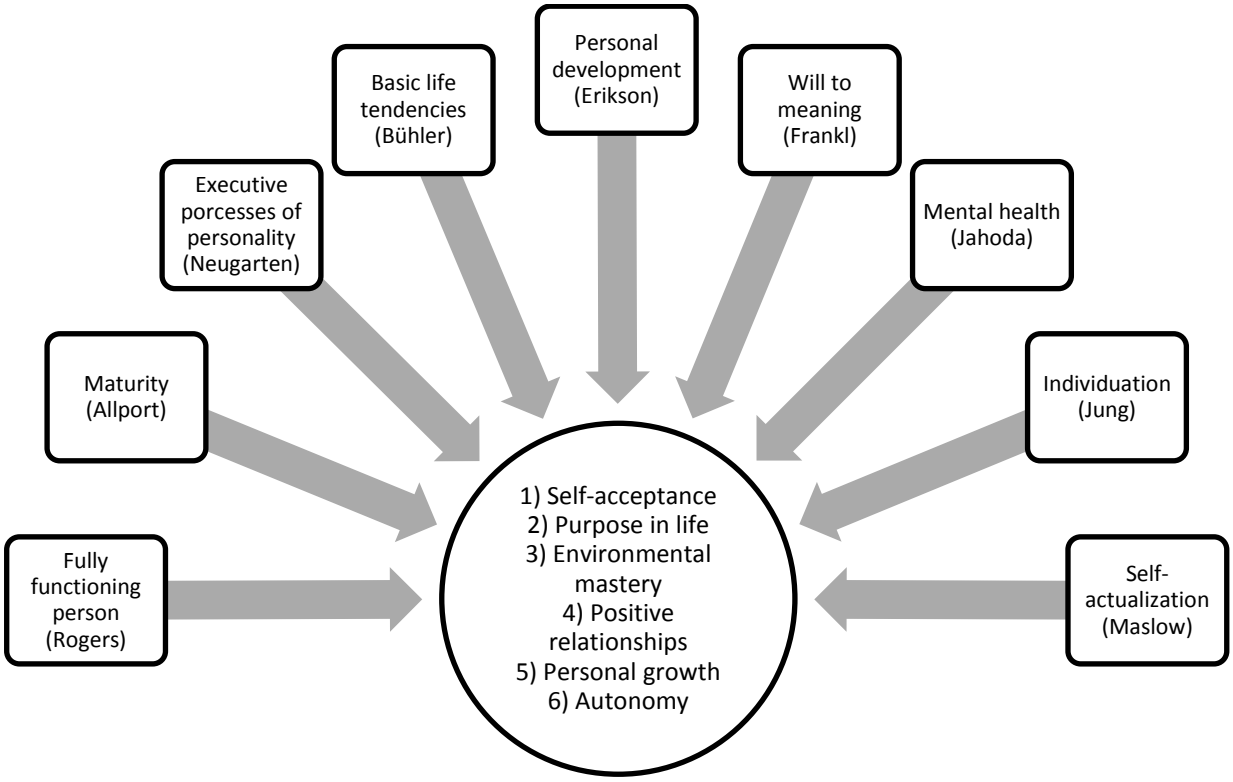

Figure 1 Conceptual Background of the Six Dimensions of Eudaimonic Psychological Well-Being (modified after Ryff, 2014)

Studies have shown the protective function of different or all aspects of eudaimonic well-being (Ryff, 2014). For example, as Ryff (2014) summarizes, purpose in life is connected to a reduced risk of cognitive impairment or stroke. Eudaimonic well-being is furthermore higher in persons with positive health behaviors such as physical exercise, and predicts better biological regulation in regard to stress hormones, cardiovascular risk factors and inflammatory markers. Not only physical health is connected to well-being, but also psychological health. Studies have found a higher risk of depression when well-being is low and longitudinal studies show that mental illness decreases with increasing well-being.

Researchers have also formulated models of well-being that integrate hedonic and eudaimonic aspects. Seligman (Rashid, 2009) discusses three aspects of happiness: positive emotions about the past, present and future, engagement and meaning. Cloninger (2006) investigated the relationship between subjective well-being and cooperativeness, self-directedness and self-transcendence and found that persons with high levels of these character traits more frequently experience positive emotions. In a factor analytical study, Gallagher, Lopez and Preacher (2009) found further evidence for an integrated model of well-being. Their confirmatory factor analysis showed that the aspects of subjective well-being from Diener's and Ryff's research and those from a model of social well-being by Keyes can be represented in one model by three factors of second order.

Taken together, models for psychological well-being from western academic research usually focus either on hedonic or eudaimonic aspects of well-being. Recently, also integrative models have been formulated. Aside from or elaborating on these models, research has started examining the effects of different interventions to increase well-being. Whereas research on interventions to decrease negative affect and diseases have a long research history, these interventions aimed at increasing well-being are still in their early stages of development (Diener & Ryan, 2009). What follows next is a short overview of such existing interventions from western academic research.

1.2 Interventions from Western Research with the Aim of Increasing Well-Being

Fordyce (1977) developed one of the first psychological interventions for increasing well-being. This program for increasing happiness instructed students to develop positive thought patterns, lead a more active life and invest more time in important relationships. After the training the intervention group rated itself as significantly happier than the control group rated itself.

Fava and Ruini (2009) developed a *well-being therapy* on the basis of Ryffs modell of psychological well-being. Well-being therapy is meant to increase well-being in patients after a successful psychotherapy. Elements of well-being therapy are cognitive restructuring (changing negative thought patterns into positive ones), planning pleasant activities, strengthening social relationships, and a training of assertiveness and problem solving skills. Evaluation studies have shown the effectiveness of well-being therapy in guarding against relapse of anxiety, cyclothymic and mood disorders (Fava & Tomba, 2009; Ryff, 2014).

Focusing on character development, Cloninger designed a program for increasing well-being called *The Happy Life: Voyages to Well-being* (Cloninger, 2006). The main goal of the program is developing self-awareness and spiritual meaning. Most of the parts of the training have been empirically verified. Another set of evidence-based interventions called *Quality of Life Coaching* teaches persons without a clinical diagnosis how to increase their satisfaction in 16 areas of life (Frisch, 2009). Seligman and his colleagues (Seligman, Steen, Park & Peterson, 2005) designed and tested single interventions for increasing well-being. They found three interventions to be specifically effective: a gratitude intervention, in which participants were requested to write a letter of gratitude to someone who had been kind to them, an intervention for discovering and enhancing personal strengths and an intervention that directs one's focus on the positive things in one's life. In the meantime Seligman, Rashid & Parks (2006) combine different interventions into *positive psychotherapy*; which increases positive emotions and enhances activity and a sense of meaning in life. In Germany, Gert

Kaluza (2011) developed a program for strengthening psychosocial health resources that aims at increasing positive experiences in daily life, cultivating social contacts, strengthening self-efficacy and developing a positive concept of one's future. Fredrickson (2008) summarizes the strategies for enhancing positive affect that have been investigated so far into four categories: a) finding positive meaning in life events, b) openness for sense perception (which can be increased by different types of meditation), c) kindness towards others and d) being social.

All in all, theories and interventions on well-being are by far not as detailed, numerous, integrated and sturdy as the academic knowledge of psychological illness. There are still many causes and connections to be investigated. At the moment different postulated facets of well-being stand for themselves, their connections to each other and to factors associated with the development of psychological illness need to be examined. Hereby, an interesting model of psychological health from ancient Indian thought could prove useful: the *tri-guna* model is an integrative model that combines hedonic and eudaimonic aspects of well-being, as well as factors leading to disease. According to the *tri-guna* model happiness *and* virtue are life goals worth striving for. In short, what constitutes happiness is described to be different for different people, however, some sources of happiness are more beneficial than others in the longterm. These longterm sources of happiness are connected to acting in virtue. Also, if someone only follows shortterm happiness, this will eventually lead to illnesses.

The next chapter provides a detailed working model of the *tri-guna* model, followed by a chapter describing the development and psychometric properties of the Tri-Guna Scales (TGS). The third chapter describes an intervention for increasing *sattva* that was tested in a multiple baseline design with a non-clinical sample. The last chapter concludes the thesis by drawing conclusions and providing an outlook. Mostly, this thesis is written in English to allow for a larger reading audience, however, chapter three is written in German because the Tri-Guna Scales are in German and the paper will be published in a German journal.

1.3 Appendices

1.3.1 References

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1.3.2 List of Figure

Figure 1 Six Dimensions of Eudaimonic Psychological Well-Being 2

2. The Model of Tri-Guna: A Working Model

2.1 Abstract

This literature review presents an overview of an ancient Indian personality system that shows promise for playing an important role in the applied research on well-being and spirituality: the *tri-guna* model. The core proposition of this model is that the psyche is influenced by three energies ("*gunas*") called *sattva, rajas* and *tamas*. They are said to be present in everyone in different degrees, explaining differences not only in behavior but also in well-being and spirituality. It is assumed that a dominance of *sattva* is favorable for well-being. In the first part of this chapter, we provide a summary of indicators for the three *gunas*, extracted from the available literature, and present empirical findings. The indicators are given separately for cognition, emotion, motivation, social and physical factors, the environment and behavior in general. In the second part we discuss interventions that are claimed to increase *sattva* and thereby further well-being. This review can be used as a theoretical basis for a more systematic empirical examination of the model.

2.2 Introduction

As defined by the WHO (1948) "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." This definition indicates the necessity of finding interventions and conditions that lead to well-being. In the past decades the focus on well-being has increased in psychological research and various approaches have contributed to the understanding of well-being. Antonovsky (1979, as quoted in Faltermeier, 2005) was one of the first to formulate a theory with the orientation on salutogenesis, that is, on the conditions that lead to health (not to disease). Meanwhile, research on well-being and happiness is becoming main-stream, as the involvement of several prominent researchers indicates. For instance, Diener and colleagues have focused on investigating subjective well-being (e.g., Diener & Ryan, 2009) and Ryff and Singer (2008) formulated a model of fundamental aspects of psychological well-being which are self-acceptance, positive relationships with others, personal growth, purpose in life, environmental mastery and autonomy. According to another theoretical approach by Seligman, Rashid, and Parks (2006) the components of happiness are positive emotions, engagement and meaning in life. Moreover, several other groups of researchers have worked on respective models and interventions (Cloninger, 2006; Fava & Ruini, 2009; Fordyce, 1977; Frisch, 2009; Gallagher, Lopez & Preacher, 2009; Seligman, Steen, Park, & Peterson, 2005).

Besides the approaches that have emerged from the western academic research listed above, there is another group of theoretical approaches which gives elaborate answers to the question as to how well-being can be increased: the psychological theories stemming from ancient Indian theorizing (for an overview see Cornelissen, Misra, & Varma, 2011; Rao, Paranjpe & Dalal, 2008). Although, so far, this "re-discovered" Indian psychology has not received much attention from western academic psychologists, the potential gain of knowledge from the Indian approach to psychology (termed "Indian psychology" in the following) is enormous thus justifying research in this field (Sedlmeier, 2006; Sedlmeier, Eberth, Schwarz, Zimmermann, Haarig, Jaeger & Kunze, 2012). Indian psychology consists of different approaches, of which most are connected through their scriptural sources. Interestingly, this tradition has empirical features and it is often claimed that its theories rest on observation and experience (Feuerstein, 2001; Sedlmeier, 2011). The scriptural sources of Indian psychology are the Vedas (lit. "knowledge") and their corollaries, a collection of ancient Indian scriptures and their interpretations and explanations.

Indian psychology contains, as a core element, a model of psychological health, the *tri-guna* model which can potentially be investigated by the sturdy methods of academic psychology. This could be fruitful for many reasons. Firstly, to date, different aspects of well-being are usually investigated separately and integrative approaches are rarely found. In contrast, the *tri-guna* model integrates several concepts that are also dealt with in academic psychology, ranging from subjective well-being, spirituality, virtues, and character strengths to the fundamental aspects of psychological well-being. Secondly, health psychology is in need of a model for measuring both psychological disease and well-being. The *tri-guna* model provides such a model. Thirdly, the *tri-guna* model could provide a theoretical background for interventions from India that are said to increase well-being which could complement interventions presently investigated academically and are mainly informed by western culture. Moreover, considering the significance of health and well-being, every potential source of knowledge should be explored. Indian health psychology, based on the *tri-guna* model, provides a vast potential source of useful knowledge; and it is likely to contribute to the knowledge on well-being, as other Indian traditions have successfully done before. Examples of interventions which were developed from traditional Indian knowledge that are now receiving the attention of academic psychologists are mindfulness meditation and loving-kindness meditation (Eberth & Sedlmeier, 2012; Fredrickson, 2008).

As Murthy and Kumar (2007) have pointed out, so far, investigators have given only partial descriptions of the *tri-guna* model, often taking only one or a few scriptural sources

into account. This leads to differing theoretical conceptions, ways of measuring the model and problems of construct validation. Murthy and Kumar (2007, p. 110) propose that "[…] what requires further study is how ancient seers and sages primarily conceived *tri-guna* in psychological terms […]." In this spirit, the purpose of this chapter is to review the literature on *tri-guna* and to offer a comprehensive description of the model which may serve as a basis for further empirical work in finding a complete and accurate construct definition.

This chapter first gives a general description of the *tri-guna* model as it is described in traditional Indian psychological thought and then focuses on discussing theoretical assumptions and empirical findings concerning the indicators of the manifestation of the *gunas* in different variables relevant to individual experience and behavior. In the second part, possible interventions to increase well-being on the basis of the *tri-guna* model are explored.

2.3 The Tri-Guna Model and its Relevance to Well-being

The following delineation of the *tri-guna* model is meant to be seen as a working model. This working model was constructed by collecting the various perspectives on the model from Indian literature. Due to different translations and interpretations of the model there are a few inconsistencies between these perspectives. We will discuss them and try to resolve them whenever possible.

2.3.1 The Context of the Tri-Guna Model

The *tri-guna* model can be applied to different contexts. Most frequently psychologists examine it from the perspective of personality psychology (e.g. Das, 1991; Marutham, Balodhi & Mishra, 1998; Wolf, 1998). However, it has also been applied to the contexts of mental health (e.g. Lakshmi Bai, Murthy & Nagalakshmi, 1975; Singh, 1971; Wolf & Abell, 2003) and occupational psychology (e.g. Elankumaran, 2004; Kaur & Sinha, 1992; Sharma, 1999). Previous research on the *tri-guna* model in the context of mental health focused on measuring the *gunas* (Singh, 1971), investigating their relationships to mental disturbances (Archana Das & Venu Gopal, 2009; Lakshmi Bai, Murthy & Nagalakshmi, 1975; Stempel, Cheston, Greer & Gillespie, 2006), and assessing the effect of *hatha*-yoga (Deshpande, Nagendra & Raghuram, 2008; Khema, Ramarao & Hankey, 2011; Rani & Rani, 2009) and mantra meditation (Wolf & Abell, 2003) on the *gunas*. In this chapter, the *tri-guna* model is investigated from the perspective of health psychology.

In classical Indian thought the *tri-guna* model is part of a larger philosophical approach, termed *Sankhya*. On the most general level of analyzing reality, *Sankhya* distinguishes between matter and spirit. This philosophy is not equivalent to other dualistic philosophies which distinguish between the physical and mental reality (Larson, 1983). This is because

Sankhya draws the line of two entirely different realities not between physical and mental, but between material and spiritual. Physical and mental substances are both seen as material: in other words, the psyche (or mind) and the body are both material (however, the mind is said to consist of a finer form of matter than the body). Apart from the mind and body there is a third component, "the *purusha*" (soul or *atman*), it is said to consist of spirit or pure consciousness, and to emanate awareness. According to *Sankhya*, the soul is what gives life and consciousness to the psyche and gross physical body. The goal of interventions based on the *Sankhya* philosophy is to become fully aware of the soul by mental practices (Bryant, 2009). This is seen as a continuous process and the more it progresses, the more well-being is claimed to increase. Why well-being increases by becoming fully aware of the soul is explained differently according to different conceptions of the nature of the soul. Relevant descriptions are found in the classical *Sankhya* philosophy and another, later traditional philosophical approach, the *Vedanta* philosophy. The *Sankhya* tradition simply describes the experience of deep soul-awareness as being free from suffering, whereas the *Vedanta* tradition postulates that the soul is blissful (*Vedanta Sutras* I.1.13, as quoted by Bryant, 2009). In other words, according to *Sankhyan* descriptions, by becoming aware of the soul suffering is annihilated. The *Vedanta* tradition additionally claims that the soul emanates happiness which penetrates the psyche to a stronger degree, the more the soul is realized. This idea is also represented by modern descriptions of Ayurveda (which build on the *tri-guna* model): the happiness and well-being which the soul emanates penetrate the psyche to different degrees and the capability of the psyche to experience this well-being is increased by strengthening *sattva*, one of the components of *tri-guna*, described below (Verma, 1997).

2.3.2 A General Description of the Gunas and their Mechanisms

Turning to the role of the *gunas* in the *Sankhya* philosophy, it states that matter consists of three components or attributes ("*gunas*") called *sattva*, *rajas* and *tamas*. The term *guna* has a multitude of meanings, and the *tri-guna* model is interpreted differently by different authors. After a dictionary study and a textual and interpretative analysis of the term *guna*, Murthy & Kumar (2007) conclude that originally the three *gunas* are conceived of as three different *components* of matter and not different *qualities* of one same substance (although the term *guna* may refer to quality in other philosophical contexts). Larson & Bhattacharya (1987) also depict the basic *Sankhya* philosophy like this – the *gunas* as being constituents (not qualities) of one continuous process of transformation. *Sattva* is commonly translated as goodness, intelligibility or lucidity; *rajas* as activity or passion and *tamas* as inertia, ignorance or darkness. An analysis of the terms can be found in Murthy & Kumar (2007).

Concerning the coactions of the *gunas*, a primary scripture about the *Sankhya* philosophy, the *Sankhya Karika* (Ganganatha, 1986, p. 40), describes them to "[…] mutually subdue, and support, and produce each other and consort together […]." On the one hand, the *gunas* subdue each other, which means a *guna* will only dominate when the two others are suppressed, on the other hand they support and produce each other and consort together, meaning they depend on each other and never exist or act separately. This is an important axiom of the theory which when applied to the context of the psyche means that even though one *guna* may be dominant, the other two will still take an effect, albeit to a lesser degree. The *gunas* increase and decrease in dependence on each other, and to outer and inner stimulation. They are said to be the basic components of all matter and therefore present in everything in different proportions. Anything that is predominantly composed of or dominated by a particular *guna* is a stimulus for that *guna*. An event, thought or behavior which is mainly *sattvic* for example, strengthens and stimulates *sattva guna* in somebody who thinks or behaves accordingly. In other words, acting in a *sattvic* way like helping someone, will increase *sattva* in other areas also, leading to e.g. positive emotions like appreciation. According to the *Mahabharata* (Ganguli, 2005) an excess of ill-luck is a stimulus for *tama guna*, leading to disgrace, error and stupefaction. These are then stimuli for further qualities appertaining to *tamas*. Such an accumulation of *tamas* can be interrupted by strengthening *rajas* or *sattva*. The *Mahabharata* (Ganguli, 2005) gives more information concerning the mechanisms of *tri-guna*. It states that when *tamas* is restrained, *rajas* increases in a greater proportion, and when *rajas* is restrained, *sattva* increases in a greater proportion. Principally any one or two *guna(s)* can be dominant; however it is also possible that all three are present in equal proportions.[1]

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1 For readers who know Ayurveda it might be interesting to read a few words about the connection between the *gunas* and the *doshas*. The *gunas* are said to be the psychological correlates of the three *doshas* (*vata*, *pitta* and *kapha*) of Ayurveda (Shilpa & Murthy, 2011). It is described that the *doshas* affect the body, whereas the *gunas* take effect on the psyche (Bhardwaj, 2003): In Indian medicine the body is mainly discussed in relation to the *doshas* and the psyche mainly in relation to the *gunas*. The *gunas* are seen as a more basic and subtle component of matter (which includes the psyche) than the *doshas*. *Sankhya* gives a detailed description of the evolution of matter, starting from the *gunas*. To depict this here would go beyond the scope of this chapter. However, it is relevant that the *doshas* are seen as composed of the *mahabhutas* (gross elements: space, wind, fire, water and earth), which are based on an evolution of the *tri-gunas* (Bryant, 2009; Larson & Bhattacharya, 1987). The *doshas* and *gunas* are said to interact with each other, and for a complete characterization of personality according to Indian psychology it is fruitful to consider both (Shilpa & Murthy, 2011). Since the emphasis of our work is on examining psychological interventions to increase well-being from Indian psychology, and the interventions described in connection with the *gunas* are more numerous and psychological in nature, we chose to focus on the *gunas*.

2.3.3 The Gunas in the Context of Psychology

Just as the manifestation of the gross external world is said to be based on the *gunas*, also all psychological phenomena are seen as the results of the interaction of the *gunas* (Bryant, 2009). Hence, different psychological conditions can be explained through proportional mixtures of the *gunas*. The *gunas* fulfill different functions complementing each other. In relation to gross matter, the function of *sattva* is described to be maintenance, *rajas* is the principle of activity and *tamas* provides the substance of nature and is the cause of destruction or decomposition. In the context of the psyche (= subtle matter) *sattva* provides for intellectual clarity, reflective discernment (Larson & Bhattacharya, 1987) and serves well-being (Deussen & Strauss, 1906). When the psyche is governed by *sattva* the light of the soul is reflected in it, thus *sattva* is described as pure or illuminating. *Rajas* provides the capacity for change and spontaneous desire (Larson & Bhattacharya, 1987), desire being its essence (Ganguli, 2005) and *tamas* is the basis for continually perceiving the surrounding world (Larson & Bhattacharya, 1987). In general, a dominance of *sattva* is said to lead to balance and stability; a dominance of *rajas* to change, activity and imbalance and a dominance of *tamas* to inertia and dullness (Frawley, 1997). A relative dominance of *rajas* and *tamas* is seen as a cause for dysfunctional conditions (Balodhi, 2005; Kapur, 2008). A psyche which is penetrated by the energy of the soul to a great extent is *sattvic*, or calm and balanced. The energy of the soul penetrates the psyche less, if it is overly passionate, and active (= *rajasic*), and even less if it is dull, confused and dejected (= *tamasic*). Of the three, *tamas* is the least favorable dominant *guna*, *rajas* is the intermediate *guna* and most favourable is *sattva* (Deussen & Strauss, 1906; *Manu-Samhita* as quoted in Knapp, 2010; Prabhupada, 1987a; Tagare, 1976a).

According to this concept, well-being is dependent on the extent of *sattva guna* that is dominant in the experience and behavior of a person. Being reminded of the axiom that the *gunas* depend on each other and never act separately, this does not mean that in order to increase well-being *rajas* and *tamas* should be totally nullified, as this is not possible. People are influenced by all the *gunas* and will show characteristics of all three (Kaur & Sinha, 1992), or as Mohan and Sandhu (1986, p. 49) put it “Every person is a triad.” *Rajas* and *tamas* have their roles to play, *rajas* as a force energizing action and *tamas* as a state of exhaustion, signalizing the need for rest and inactivity. In the context of increasing well-being the goal lies in strengthening *sattva* so that it becomes predominant. Predominant *sattva* not only enhances well-being, but also strengthens the individual’s invulnerability to disorders (Kapur, 2008). Although *sattva* is not simply a balance between *rajas* and *tamas*, one of its functions

is to harmonize and balance these two *gunas* so that their energy can be used as necessary (Braud, 2008).

The *tri-guna* model is said to be a model of human traits *and* states (Paranjpe & Rao, 2008; Sitamma, 2005). This is not uncommon: mindfulness, for example, can also be viewed as state or trait (Prazak, Critelli, Martin, Miranda, Purdum & Powers, 2012). Both personality and psychological states are explained through the dominating *guna(s).* The proportions of *sattva, rajas* and *tamas* present in the psyche are said to change continuously depending on outer circumstances like time and place, but also inner circumstances like thoughts (Bhardwaj, 2003). This may seem contradictory, if a personality trait is defined as a *lasting* attribute in which people differ (Asendorpf, 2004). However, as Fisseni (2003) points out, in the concept of personality it is assumed that different traits, processes, states and actions of a person form a *relatively constant but dynamic* whole. So, one could interpret the trait-proportion of the *tri-guna* model to be the "relatively constant" and the state-proportion to be the "dynamic" part of the whole. The relatively constant combination of *gunas* accounts for the different personality types described in Ayurveda. The state-proportions form the "dynamic" part of the whole, meaning that a particular combination of the *gunas* will be relatively constant in an individual within which there is continuous change. The *Mahabharata* (Deussen & Strauss, 1906), for example, describes various qualities of the respective *gunas* to *emerge occasionally*. The focus of this paper lies on the changeable aspects of the *gunas* in a person. This calls for a detailed description of the functioning of the *gunas* in different aspects of the psyche, in which changes can be observed (see next paragraph). The dynamic change of the *gunas* is well described in Goswami & Adhikari (1988c, p. 10): "A good person is sometimes torn by passion, and a passionate person sometimes wants to give up everything and rest. An ignorant person may sometimes become disgusted with his depraved life, and a passionate person may sometimes indulge in bad habits in the mode of ignorance."

Interestingly, Kumar (2007) compares the *guna* model to a compass leading the way to wholesome living. No matter "where" one is, the "*guna* compass" sets the example of a *sattvic* lifestyle and can thereby guide a person through crises or despair into the direction of well-being and harmony. In the same line Theodor (2010) portrays the *gunas* as three different "universal paths" on which people choose to travel. It is this understanding of the *gunas* being relevant to different life-styles, which is crucial to health psychology. Of course the *tri-guna* model can be used to assess personality types and make predictions of behavior according to the type, but Kumar (2007) and Theodor (2010) argue that the *tri-guna* model provides for

much more. It describes life-styles, motives and behavior people choose and the results they attain by following them. Most importantly, it can help to improve well-being by depicting a life-style which leads to well-being, the *sattvic* life. The path of *sattva* may seem somewhat boring at the beginning, as Theodor describes, but will eventually lead to well-being. This reminds one/us of endeavors for a healthy life-style which are not attractive in the short-term, but will gradually lead to increased health and well-being in the long-term. The path of *rajas* first appears attractive but in the long-term it only leads to exhaustion and distress. And the path of *tamas* is a path of carelessness which ultimately results in self-destruction. Clearly, life-styles governed by the influences of *rajas* and *tamas* refer to unhealthy living which are at first comfortable or exciting but eventually lead to a ruined health and decreased well-being. Also Murthy and Kumar (2007) propose that the core traits of each *guna* are related to the results of *sattvic, rajasic* or *tamasic* actions – as the experiences of purity (well-being), suffering or ignorance respectively. This understanding puts more emphasis on choices and life-styles than on traits.

In summary, relevant keys to the construct definition of the *tri-guna* model are the axioms that: a) matter (including the psyche) constantly changes and this process of transformation has three constituents, b) these three constituents act together and depend on each other, c) the constituents struggle for dominance and when one (or two) become(s) dominant the influence of the other(s) decreases, and d) there is no state in which one of them is completely absent.

The scriptural sources of Indian psychology give detailed descriptions of the influence of the dominance of a particular *guna* on the psyche, and also depict how *sattva* can be strengthened, so that it becomes the dominating *guna*. Thus, these descriptions give the necessary details to diagnose the manifestation of the *gunas* and to intervene so that well-being can be increased. In the following paragraph these symptoms of the manifestation of the different *gunas* are addressed in detail, in order to provide a working model for the empirical investigation of the *guna*-model. It is of crucial importance for us to make the model we will work with transparent, so that it can become open to scrutiny. It is an attempt to provide a comprehensive description of the *guna*-model that integrates many of the partial descriptions which are the basis of work in this field at present. Some of the components of the model have been tested empirically and these results will also be discussed in the following.

2.4 The Influence of the Gunas on Cognition, Emotion, Motivation and Other Variables

Although the *gunas* manifest in many aspects of human behavior and experience, their long-term effects (especially the effect of the dominant *guna*) are often summed up by one main term for each *guna* according to different authors. The different long-term manifestations of *sattva* are summarized by the terms pleasure, satisfaction and joy; the variety of *rajas* is summarized by the terms suffering, frustration and pain and the manifestations of *tamas* are summarized as bewilderment, indifference and oppression. Although dominant *rajas* and *tamas* can cause short-term positive effects, these one-word-summaries of the *gunas* only capture the negative effects because the focus lies on the long-term effects. *Rajas* and *tamas* also have necessary and beneficial effects (e.g. facilitating action (*rajas*) and rest (*tamas*)) in combination with dominant *sattva* (as discussed above, the *gunas* work together). The detrimental effects of excessive *rajas* and *tamas* are nullified when *sattva* is strengthened. In the traditional literature there are only a few hints of the positive functions of *rajas* and *tamas* when they are subdominant.

Again, it is evident that the effects of dominant *sattva* are most favorable for well-being and the question arises, how *sattva* can be increased to augment well-being. In order to answer this question it is necessary to know the detailed manifestations of the *gunas* in the psyche and other relevant variables. Such a description and classification can help in two ways: a) to develop a comprehensive scale to diagnose the predominance of the *gunas* and b) to set goals for interventions that further *sattvic* qualities and behavior. What follows in the next section of this chapter are descriptions of the indicators for the respective *gunas.*

Westhoff, Hagemeister and Strobel's (2007) *behavioral equation* was used as a foundation to structure the many aspects of human experience and behavior in which the *gunas* are manifested. Originally, the behavioral equation was developed in order to structure job demands that are important for assessing occupational aptitude. The equation states that human behavior is a function of a variety of factors and their interactions (*I*), and summarizes these factors into six groups. It provides a useful tool for systematizing the factors that are important for the prediction, explanation and modification of individual behavior also outside of the occupational context. The equation is: *behavior = fI (cognitive, emotional, motivational and social variables, variables of the organism and the environment)*. Westhoff (2005) comprehensively describes the constructs belonging to these groups of factors which have proven to be of value in the context of assessing occupational aptitude. This description was used as a foundation for structuring the different factors relevant to the *tri-guna* model,

however due to the different context, some factors were added (e.g. “way of dealing with success and/or failure”), while for a few factors relevant in the occupational context no scriptural descriptions for the manifestation of the *gunas* were found (e.g. “way of dealing with emotional challenges” or “artistic talent”).

The indicators of the respective *guna* were taken from traditional Indian texts, as they should present the model closest to the original formulation. Because *Sankhya* is one of the oldest in classical Indian philosophical systems, some of its basic ideas can also be found in other philosophies. This applies especially to the *guna*-model. To increase the search domain, we also searched through texts that are not purely *Sankhyan* but that have picked up on the *guna*-model and integrated it into their philosophy. Information given in purports to the texts was also added to the compilation. Inconsistent information that was given in the different texts was treated equally and added to the compilation. (The working-model character of our compilation once again becomes evident here.) Scriptures taken into consideration are the *Maitri-Upanishad* (Hume, 1962, as quoted by Suneetha & Srikrishna, 2009), *Maitrayana-Upanishad* (Michel, 2006), the *Caraka Samhita* (Sharma, 1994) and other texts on *Ayurveda* (Buhrman, 1997, 1998, 2005; Frawley, 1997; Frawley & Summerfield Kozak, 2001; Ranade, 1994; Verma, 1997), the *Yoga Sutras* (Bryant, 2009), the *Bhagavad-gita* (Bhanu Swami, 2003; Maheshwar, 1978; Prabhupada, 1989; Theodor, 2010), which is part of the *Mahabharata*, the *Mahabharata* itself (Deussen & Strauss, 1906; Ganguli, 2005), the *Sankhya Karika* (Colebrooke & Wilson, 1837; Ganganatha, 1986) and other scriptures on *Sankhya* (summarized by Larson & Bhattacharya, 1987), and the *Bhagavata Purana* (Goswami & Adhikari 1988a–c; Prabhupada, 1987a–e; Tagare, 1976a–b, 1978). Some details from two modern descriptions of *guna* indicators (Gupta, 1977, as quoted by Mohan & Sandhu, 1986; Kumar, 2007) were also added. However, information from these two recent attempts, not only to explain the *guna* model but also to find indicators of the *gunas* in contemporary society inconsistent with or totally different from the traditional interpretations, was not added.

When reading the indicators listed in the following tables, it might seem that each scripture proposes different indicators for the respective *guna* for a specific variable. However, this is not the case; there is a great overlap in the information given by the different texts. In order to avoid redundancy in the tables, these common indicators were not mentioned more than once. Furthermore, the profiles might look like extreme descriptions of people that rarely exist. And in fact – they are rare, as in any case for the extremes of any quality. The difference of the influence of the three *gunas* will not be as grave in most people, as portrayed

below. This characterization of the extremes is only for the purpose of singling out the specific indicators of the respective *gunas*. Moreover, it might be surprising that the *Mahabharata* (Deussen & Strauss, 1906) repeatedly describes symptoms of *sattva* as being "aimless", as for instance "aimless cognition" or "aimless cult", or that it describes "inactivity" to be a quality of *sattva*. It does not fit into the other details of the model to assume a person with dominant *sattva* would act aimlessly. However, this translation can be understood to indicate goal-oriented action without a desire for the fruits of the activity. Such activity is considered "aimless", "disinterested action" or "inactivity" in the Vedic worldview as it does not create karma (reactions to actions) (see Theodor, 2010, p. 51 for further details).

2.4.1 Cognitive Variables

Before considering the manifestations of the *gunas* in different cognitive variables (Table 1), it is important to note that what is understood as "knowledge" in *Sankhya* is not the same as the western understanding of knowledge. In *Sankhya*, *vidya* (knowledge) mainly refers to (direct or intuitive) knowledge of reality, that is, of the difference between matter and spirit – recall that body and mind are seen as matter and the soul as spirit. Thereafter, a person with this kind of knowledge discriminates between these two and a person devoid of this knowledge does not, or rather mistakes the non-self (body & mind) as the self, ignoring the real nature of the self as the spirit soul (Palsane, Bhavsar, Goswami & Evans, 2002).

Table 1 Symptoms of the *Gunas* in Cognitive Variables

	sattva	**rajas**	**tamas**
perception	organs capable of perception (Larson & Bhattacharya, 1987) quiescent senses (Tagare, 1978) seeing, hearing, tasting correctly (Prabhupada, 1989) receptive mind (Frawley & Summerfield Kozak, 2001)	"inability of the perceiving senses to disentangle themselves from mundane objects" (Goswami & Adhikari, 1988c, p. 570)	inert organs, incapable of perception (Larson & Bhattacharya, 1987) stupor (Tagare, 1978)
learning	elucidation, studying gratuitously (Deussen & Strauss, 1906)		
memory	remembrance (Deussen & Strauss, 1906) good memory (Ranade, 1994)	fluctuating memory (Ranade, 1994)	forgetfulness (Deussen & Strauss, 1906) bad memory (Ranade, 1994) loss of memory (Ganguli, 2005)
knowledge	spiritual knowledge, knowledge of the *atman* [the soul] (Tagare, 1978) truth, knowledge itself (Larson & Bhattacharya, 1987) more knowledge and wisdom than others, seeing the spirit soul present in all entities (Prabhupada, 1989) knowledge, seeing one reality in all beings (Theodor, 2010)	inconsistent knowledge (Maheshwar, 1978) "scientific knowledge of the material body", "knowledge based on duality" (Goswami & Adhikari, 1988c, p. 575) considering the material body to be the self (Prabhupada, 1989) seeing a variegated reality (Theodor, 2010)	ignorance (Larson & Bhattacharya, 1987) knowledge concerned with the comfort of the body (Prabhupada, 1989) seeing one activity as everything, minute and meager, not aimed at the truth, not based on a well-founded cause (Theodor, 2010)

thinking	intellect is luminous (Colebrooke & Wilson, 1837) freedom from worries and doubts, calm mental behavior, awareness of one's autonomy, purity, aimless cognition, non-delusion, enlightening insight, wisdom (Deussen & Strauss, 1906) rational (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) discrimination (Tagare, 1978) purity, clearness (Larson & Bhattacharya, 1987) seeing things the way they are (Prabhupada, 1987a) "careful study of the past and future" (Goswami & Adhikari, 1988c, p. 560f.) ability to understand reality (Prabhupada, 1989) clarity, seeing the good in everything, life is seen as a learning experience (Frawley, 1997) liberality (Ganguli, 2005) "Maintaining a balance and harmony of opposites […] recognition and understanding of things as they are, without judgment or desire to alter" (Kumar, 2007, p. 22), finding miracles in the ordinary, "[...] trusting the process of the universe and believing that things will work out." (Kumar, 2007, p. 23) lucidity (Bryant, 2009)	worries, shamelessness, doubts, thinking of past, present and future possibilities (Deussen & Strauss, 1906) inability to see things the way they are (Prabhupada, 1987a) unsteady perplexity (Goswami & Adhikari, 1988c) uncontrollable, racing thoughts (Buhrman, 1997) strong opinions, inconsistent in problem solving, blaming others for problems (Frawley, 1997) hectic, nervousness (Verma, 1997) reliving painful events in one's mind, or playing out solutions to them (Buhrman, 1998) regret (Ganguli, 2005) looking for improvement of things (Kumar, 2007)	dullness of mind (Colebrooke & Wilson, 1837) not discriminating, lack of judgment, rigidity, in confusion, mental darkness, immaturity, seeing truth in untruth, criticizing (Deussen & Strauss, 1906) misunderstanding or non-understanding, obstinate in stupidity, not looking for cause and effect, absorption in one routine, "lazy or dully obstinate way of looking at things which has no eye for the real nature of the world" (Maheshwar, 1978, p. 228) "faculty of understanding fails" (Tagare, 1978, p. 2079) insanity, dream, veiling, covering, delusion (Larson & Bhattacharya, 1987) unable to tell right from wrong, "distortion of the intelligence because of too much activity" (Goswami & Adhikari, 1988c, p. 570) inability to understand the things as they are, foolishness, illusion, madness (Prabhupada, 1989) negativity (Buhrman, 1997) ignorance about own problems, not dealing with own problems, "allow negative influences to dominate them" (Frawley, 1997, p. 35) inability to comprehend, partial and erroneous comprehension, ignorance, illiberality, censuring good acts, unripe judgment, want of discrimination, stupid reasoning (Ganguli, 2005) stubbornness (Theodor, 2010)
concentration		scattered, fickle minded (Larson & Bhattacharya, 1987) distraction, inability to concentrate (Buhrman, 1997) absentmindedness (Michel, 2006)	inattention (Maheshwar, 1978) inability to concentrate (Goswami & Adhikari, 1988c)
focus of attention	internal focus (Frawley & Summerfield Kozak, 2001) living in the moment, the present (Kumar, 2007)	external focus (Frawley & Summerfield Kozak, 2001) worldly affairs (Ganguli, 2005) focus on the future (Kumar, 2007)	mind fixed on sense objects without higher awareness (Goswami & Adhikari, 1988c) mind locked into physical existence, overly preoccupied with own sensory pleasure and pain (Buhrman, 1998) external focus, "blindness to the internal world of consciousness" (Frawley & Summerfield Kozak,

			2001, p. 15) focus on the past (Kumar, 2007)
intelligence	intelligence itself (Larson & Bhattacharya, 1987) very intelligent (Ranade, 1994)	averagely intelligent (Ranade, 1994)	unintellectual (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) unintelligent (Ranade, 1994)
creativity	creativity (Kumar, 2007)	creative activity (Bryant, 2009)	
style of working/ acting	efficiency, endurance (Deussen & Strauss, 1906) characterized by serenity (Tagare, 1976a) full of foresight (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) free of attachment (Goswami & Adhikari, 1988c) regulated, without attachment, love, hatred or desire for the fruitive results, determination, enthusiasm till the work is completed (Prabhupada, 1989) free from false ego and attachment (Bhanu Swami, 2003) concerned about purity of means, work done in small steps, search for long-lasting, simple benefits, non-violent means (Kumar, 2007)	unjust, over endeavor for goals, laxness, endurance, heroism, boldness, fight, passion (Deussen & Strauss, 1906) characterized by vehemence (Tagare, 1976a) blinded by personal desires, audacity, experiences struggle (Goswami & Adhikari, 1988c) harmful, passionate (Theodor, 2010)	unregulated actions, lack of persistence (Deussen & Strauss, 1906) characterized by dullness (Tagare, 1976a) lacking foresight (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) negligence of error (Maheshwar, 1978) unregulated, without principle (Prabhupada, 1989) “the end justifies the means” (Kumar, 2007, p. 21) procrastination, undisciplined (Theodor, 2010)

What follows in the next three paragraphs is a summary of the cognitive characteristics according to the respective *guna* and relevant empirical findings connected to these theoretical assumptions.

When *sattva* is the dominating *guna* the organs involved in perception are expected to be quiescent and receptive, allowing for accurate perception. People with dominant *sattva* are intrinsically motivated to learn and have a good memory. They have a concept of the difference between the temporary body and the eternal spirit soul. They see the eternal spirit in others and live with a feeling of relatedness to others on the spiritual level. When *sattva* dominates, thinking is rational and calm, and the individual appraises his or her perception realistically. Furthermore, the individual has a high self-efficacy and broods and worries seldom. People with dominant *sattva* have a high stress tolerance, as they think positively and are able to perceive surroundings, own emotions, thoughts and behavior without expecting them to be different, or wanting to change or control them. With predominating *sattva* a person gives attention to his or her inner world of spirituality, emotions and thoughts. Furthermore, a person with dominating *sattva* is more likely to be above average in intelligence. Concerning “creativity” Kumar (2007) proposes that it is energized by *sattva* while Bryant (2009) attributes it to *rajas*. A person with prevailing *sattva* has an efficient

working style. He or she considers the consequences of his or her actions and keeps up the enthusiasm until a task is completed.

Some of these descriptions have been confirmed empirically. Sitamma (2005) reports that studies have found that *sattva* correlates positively with intelligence, short-term memory and concentration, and negatively with neuroticism. In 2003 J. A. Hopkins investigated correlations between the five factors of the NEO-PI-R and the *gunas* measured with the Vedic Personality Inventory (Wolf, 1998). The manuscript has not been published yet but since the results are of high relevance we will consider them. These results confirm the negative correlation between *sattva* and neuroticism ($r = -.41$, $p < .001$). Furthermore, *sattva* correlated with openness to experience ($r = .23$, $p < .01$). Kaur and Sinha (1992) found correlations between *sattva* and personal effectiveness ($r = .24$, $p < .01$) and self-actualizing behavior ($r = .31$, $p < .01$). Daftuar and Anjuli (1997) demonstrated that *sattva* does not correlate with occupational stress. Furthermore, *sattva* correlated negatively with the subscales attention problems ($r = -.23$, $p > .05$) and thought problems ($r = -.2$, $p > .05$) of the Adult Self Report (Archana Das & Venu Gopal, 2009). Other consistent correlations (Hopkins) are correlations with subscales of the NEO-PI-R which indicate that *sattvic* people appreciate art and beauty ($r = .43$, $p < .001$), are intellectually curious ($r = .42$, $p < .001$), believe in their efficacy ($r = .52$, $p < .001$), are personally organized ($r = .41$, $p < .001$), think before speaking or acting ($r = .31$, $p < .01$) and are generally not very vulnerable to stress ($r = -.74$, $p < .001$). Contrary to what might be expected for *sattva* Hopkins found neither a significant correlation between *sattva* and the subscale measuring openness to emotions and feelings, nor between *sattva* and the subscale measuring openness to rethinking one's values.

The organs involved in perception of a person with predominating *rajas* are strained to the full limit and over agitated, making it impossible to perceive subtleties. The memory is mediocre, or fluctuates. A person with prevailing *rajas* has no concept of a spiritual commonality of all beings, and rather only conceives of differences and commonalities on the basis of material characteristics. When *rajas* dominates, thoughts are uncontrollable and rotate around worries. Immediately associated to perception are thoughts of how to change reality, which leads to a low stress-tolerance. Persons with dominant *rajas* have difficulty concentrating, are averagely intelligent and give little conscious attention to spirituality, emotions and thoughts.

According to studies Sitamma (2005) refers to, *rajas* correlates negatively with self-actualization. An inconsistent result is that *rajas* did not correlate with occupational stress in one study (Daftuar & Anjuli, 1997). Hopkins found a negative correlation between *rajas* and

openness to experience (r = -.28, p < .001) and Archana Das and Venu Gopal (2009) report a correlation between *rajas* and attention problems (r = .2, p > .05).

If *tamas* prevails perception is said to become inaccurate, as will be the case after the consumption of alcohol or other drugs. The memory of people with dominant *tamas* is defective. They are not interested in the truth and rarely question or correct their concepts. When *tamas* is predominant an individual has difficulties in understanding circumstances and facts. Thoughts focus on negative consequences, and the individual ignores his or her problems instead of trying to solve them. He or she has difficulties concentrating, rarely gives attention to spirituality, emotions and thoughts and is most likely to be of under-average intelligence.

Sitamma (2005) reports studies that found negative correlations between *tamas* and short-term memory, intelligence, concentration and positive correlations between *tamas* and psychoticism, neuroticism and self-actualization. Also Stempel et al. (2006) found a correlation between *tamas* and psychoticism (r = .3, p < .05). Kaur and Sinha (1992) found negative correlations between *tamas* and personal effectiveness (r = -.12, p < .05) and self-actualizing behavior (r = -.21, p <.01). In Daftuar and Anjuli's study (1997) dominant *tamas* correlated very highly with occupational stress (r = .97, p < .01). Furthermore, *tamas* seems to correlate positively with the subscales thought problems (r = .26, p < .01; Archana Das & Venu Gopal, 2009) and attention problems (r = .64, p < .01; Archana Das & Venu Gopal, 2009) of the Adult Self Report and negatively with openness to experience (r = -.19, p < .05; Hopkins). Contrary to the theoretical assumptions, Hopkins found no significant negative correlation between *tamas* and the subscale of the NEO-PI-R measuring openness to rethinking one's values.

Correlations between different relevant NEO-PI-R subscales and *rajas* and *tamas* respectively were very similar in Hopkins' study. Probably this is because the factors *rajas* and *tamas* correlate positively in the Vedic Personality Inventory (Wolf, 1998) which was used in this study. Both *rajas* and *tamas* correlated negatively with the tendency to appreciate art and beauty (*rajas:* r = -.3, p < .01; *tamas:* r = -.4, p < .001), to be intellectually curious (*rajas:* r = -.31, p < .01; *tamas:* r = -.37, p < .001), to believe in one's efficacy (*rajas:* r = -.35, p < .01; *tamas:* r = -.5, p < .001), to be personally organized (*rajas:* r = -.32, p < .01; *tamas:* r = -.36, p < .01) and to think before speaking or acting (*rajas:* r = -.25, p < .05; *tamas:* r = -.27, p < .05). Both *rajas* and *tamas* correlated positively with a vulnerability to stress (*rajas:* r = .52, p < .001; *tamas:* r = .71, p < .001).

2.4.2 Emotional Variables

The following table (Table 2) lists the symptoms of dominating *sattva*, *rajas* and *tamas* in emotional variables. Although it also has cognitive components, the variable "satisfaction and happiness" is discussed together with the other emotional variables. For the emotional variables there is a considerable overlap between the symptoms of *rajas* and *tamas*, for example anger, fear, despondence, grief and capriciousness are symptoms of *rajas* and *tamas*. However, whereas *rajas* may lead to some kind of pleasure or love, *tamas* is not said to lead to any positive emotions. Furthermore, the negative emotions are generally described in more severe terms when listed as symptoms of *tamas*. Hopkins' study shows some empirical evidence for this: positive correlations between the neuroticism subscales and *rajas* and *tamas* respectively were strongest for *tamas*.

There is also a slight overlap between *sattva* and *rajas* for emotions such as love and pleasure. However, the love experienced by persons influenced by *sattva* is more global, as it rests on a vision of seeing one reality in all beings (Theodor, 2010). *Rajasic* love is based on distinguishing between beings on the basis of material characteristics (Theodor, 2010). This leads to liking and disliking. Also, the positive *rajasic* emotions (e.g. love, affection) are directed to worldly objects (Ganguli, 2005). In general the overlaps between *sattva* and *rajas*, and *rajas* and *tamas* support the assumption that in some ways *rajas* is the intermediate *guna* between *sattva* and *tamas.*

Table 2 Symptoms of the *Gunas* in Emotional Variables

	sattva	**rajas**	**tamas**
frame of mind, emotional state	love, pleasure, delight, cheerfulness, joyfulness, satisfaction, delight, sense of well-being, peace of mind, calmness of the heart, courage (Deussen & Strauss, 1906) agreeable, renunciation, contentment, purity, compassion, lightness, pleasantness, affection, tranquility (Larson & Bhattacharya, 1987) fearlessness, detachment from the mind (Goswami & Adhikari, 1988c) happiness (Prabhupada, 1989) love uniting all things (Frawley, 1997) gladness (Ganguli, 2005) detachment (Bryant, 2009)	anguish, grief, anger, fear, despondence, impatience, pain, hatred, hankering, dissatisfaction, disgust, remorse, love, pleasure (Deussen & Strauss, 1906) disagreeable, frustration, anxiety, misery (Larson & Bhattacharya, 1987) agitation (Prabhupada, 1987b) sorrow (Ganguli, 2005) restlessness, passion, attachment (Bryant, 2009) affected by sorrow and joy (Theodor, 2010)	anger, fear, despondence, grief, timidity, sullenness, cowardice, bewilderment (Deussen & Strauss, 1906) oppressive, depression, misery, sorrowfulness (Larson & Bhattacharya, 1987) violent hatred, delusion, unhappiness, depression (Goswami & Adhikari, 1988c) madness, morose (Prabhupada, 1989) hopelessness (Buhrman, 2005) gloom, cheerlessness (Ganguli, 2005) despair (Michel, 2006) dejected (Theodor, 2010)

emotional stability	tranquility, balance, gravity, even-tempered, firmness, collectedness, balance, composure (Deussen & Strauss, 1906) forbearance (Tagare, 1978) peace of mind (Frawley, 1997) tolerance, equanimity (Goswami & Adhikari, 1988a)	capriciousness (Colebrooke & Wilson, 1837) impetuousness (Deussen & Strauss, 1906) proneness to lose one's temper (Goswami & Adhikari, 1988a) "rash eagerness to fight" (Goswami & Adhikari, 1988c, p. 561) agitated mind (Frawley, 1997) enjoyment of happiness, endurance of sorrow (Ganguli, 2005) fickleness (Michel, 2006) restlessness, passionate (Theodor, 2010)	proneness to lose one's temper (Goswami & Adhikari, 1988a) capriciousness (Michel, 2006)
way of dealing with feelings	fitting expression of emotions (Ranade, 1994)	exaggerated expression of emotions (Ranade, 1994)	
satisfaction & happiness	not-lamenting, satisfaction, sense of well-being (Deussen & Strauss, 1906) "satisfaction in the bliss of the Self" (Tagare, 1978, p. 2077) "satisfied in any condition of life" (Prabhupada, 1987d, p. 137) lasting contentment & happiness (Frawley, 1997) happiness based on long-term results, springing from the tranquility of the soul and heart (Theodor, 2010)	dissatisfaction (Deussen & Strauss, 1906) insatiability (Hume, 1962, as quoted by Suneetha & Srikrishna, 2009) joy which turns into disappointment, fatigue, satiety, disgust, suffering, sin (Maheshwar, 1978) experiencing struggle (Goswami & Adhikari, 1988c) seeking for happiness in external things (Frawley & Summerfield Kozak, 2001) happiness based on immediate satisfaction, which later turns into suffering, springing from sense-gratification (Theodor, 2010)	lamentation (Goswami & Adhikari, 1988c) discontent (Ganguli, 2005) seeking pleasure by giving pain to others (Kumar, 2007) happiness based on illusion, the pleasure derived from indolence, negligence and sleep (Theodor, 2010)

To sum up, when *sattva* dominates, a person experiences a variety of positive emotions like happiness, joy and love. A person with dominant *sattva* is said to be emotionally stable and to express emotions adequately. *Sattvic* persons are satisfied with their life, and rarely lament. *Sattvic* happiness is steady and independent from external circumstances, as it comes from the tranquility of the psyche which allows the energy of the soul to unfold itself.

There is empirical evidence for the connection between *sattva* and positive emotions: *sattva* was found to correlate positively with the extraversion subscale "positive emotions" of the NEO-PI-R (r = .56, p < .001; Hopkins). *Sattva* also correlated negatively with the subscales "anxiety" (r = -.6, p < .001), "angry hostility" (r = -.69, p < .001) and "depression" (r = -.75, p < .001). Stempel et al. (2006) found that *sattva* correlated negatively with the subscale measuring phobic anxiety (r = -.44, p < .01). Inconsistently with the theoretical assumptions, *sattva* did not correlate with job satisfaction (Sharma, 1999). Sharma argues this

could be because of the emphasis on material benefits in the working world, instead of facilitating self-actualization, which should be a priority for persons with dominant *sattva*. Khema et al. (2011) found positive correlations between *sattva* and emotional intelligence (pre: $r = .25$, $p < .01$, post: $r = .34$, $p < .001$).

When *rajas* dominates, the individual experiences mainly negative emotions and seldom some joy and pleasure. Characteristic for *rajas* are frustration, dissatisfaction and restlessness stemming from unfulfilled desires. Also, the person is emotionally unstable and expresses his or her emotions in an exaggerated manner. Persons with dominant *rajas* enjoy pleasure which disappoints them in the long term. Consistent with these descriptions is that Sharma (1999) found that *rajas* correlates negatively with job satisfaction ($r = -.29$, $p < .05$) and Hopkins reports a positive correlation with neuroticism ($r = .58$, $p < .001$). *Rajas* correlated with anxiety ($r = .29$, $p < .05$) in Stempel et al.'s study (2006) and the Adult Self Report subscale anxious/depressed ($r = .2$, $p > .05$) in Archana Das and Venu Gopal's (2009) study.

When *tamas* dominates, a person is described to experience negative emotions like despair, depression and timidity. Like for *rajas* a person with dominating *tamas* is said to be emotionally instable. *Tamasic* persons are happiest when they do not have to do anything constructive, and mostly they are unhappy and lament a lot. Inconsistent with this is that *tamas* did not correlate negatively with job satisfaction in Sharma's study (1999). Like *rajas*, also *tamas* correlated positively with neuroticism ($r = .72$, $p < .001$) in Hopkins' study. Khema et al. (2011) report negative correlations between *tamas* and emotional intelligence (pre: $r = -.28$, $p < .01$, post: $r = -.24$, $p < .05$). Additionally, *tamas* correlated positively with the subscales measuring depression ($r = .31$, $p < .05$), anxiety ($r = .43$, $p < .01$) and phobic anxiety ($r = .33$, $p < .05$) of the Brief Symptom Inventory (Stempel et al., 2006). Archana Das and Venu Gopal (2009) found correlations between *tamas* and the Adult Self Report subscale measuring anxiousness/depression ($r = .49$, $p < .01$).

For both *rajas* and *tamas* Hopkins found correlations with NEO-PI-R subscales relevant to emotional variables. *Rajas* and *tamas* correlated positively with the subscales "anxiety" (*rajas:* $r = .32$, $p < .01$; *tamas:* $r = .65$, $p < .001$), "angry hostility" (*rajas:* $r = .55$, $p < .001$; *tamas:* $r = .59$, $p < .001$) and "depression" (*rajas:* $r = .44$, $p < .001$; *tamas:* $r = .77$, $p < .001$) and negatively with the subscale "positive emotions" (*rajas:* $r = -.33$, $p < .01$; *tamas:* $r = -.59$, $p < .001$).

2.4.3 Motivational Variables

The next table (Table 3) lists the influence of the *gunas* on motivational variables. The variable "spirituality" is discussed together with the other motivational variables, although it also has other components. In short, persons with dominant *sattva* are motivated by duty, persons with dominant *rajas* are motivated by desires for personal gain and persons with dominant *tamas* are characterized by a lack of motivation.

Table 3 Symptoms of the *Gunas* in Motivational Variables

	sattva	**rajas**	**tamas**
motives	purity, no ill motives (Deussen & Strauss, 1906) to be engaged for the sake of God, not expecting material benefits (Prabhupada, 1989) tranquility (Ganguli, 2005) dharma, duty, performing actions for their own sake, expecting no fruit in return, above sensual repulsion or attraction, determined to sustain health (Theodor, 2010)	ill motives, satisfying lust (Deussen & Strauss, 1906) hard work for fortune and prestige (Goswami & Adhikari, 1988c) to fulfill desires of oneself, family and society, acting out of pride or to get respect (Prabhupada, 1989) "seek power over others" (Frawley, 1997, p. 35) social achievements, completion of tasks, fame, action (Buhrman, 2005) earthly motives (Ganguli, 2005) concentrated on achievement, outcome, success, "concerned with achieving the ends" (Kumar, 2007, p. 21) to gain fruits of action like success or honor; hypocrisy, ostentation, satisfaction of one's desires, determined to make money and enjoy (Theodor, 2010)	ill motives (Deussen & Strauss, 1906) foolishness: things which are impossible to achieve (Prabhupada, 1989) "disinclination toward constructive activity" (Bryant, 2009, p. xlix) obscure notions, aim to harm others, self-torture, determined not to let go of sorrow, intoxication, sleep, fear and dejection (Theodor, 2010)
volition	discipline, practicing asceticism gratuitously (Deussen & Strauss, 1906) mind & sense control (Tagare, 1978)) self-control (Goswami & Adhikari, 1988c) unbreakable determination which controls mind and senses (Prabhupada, 1989) determination to avoid harmful but momentarily pleasing things (Ranade, 1994) bodily "gates" are controlled, determination to maintain one's psycho-physical functions, self-restraint, austerity, determination (Theodor, 2010)	non-renunciation, addiction to lust and pain, impatience (Deussen & Strauss, 1906) unsteadfastness (Hume, 1962, as quoted by Suneetha & Srikrishna, 2009) uncontrollable hankering, determination to strive for personal gain (Prabhupada, 1989) restlessness, hankering, determination for enjoyment (Theodor, 2010)	lack of self-control, impatience (Deussen & Strauss, 1906) choosing the path of least resistance (Maheshwar, 1978) "determination which cannot go beyond dreaming, fearfulness, lamentation, moroseness and illusion" (Prabhupada, 1989, p. 822) lacking will-force (Buhrman, 2005) laziness, undisciplined (Theodor, 2010)

desires	equanimity, non-lustfulness, free of desires, strives for tranquility, renouncement (Deussen & Strauss, 1906) without undue desires (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) non-covetousness, senses quiescent (Tagare, 1978) no attraction or repulsion, not desiring the fruits of one's actions (Theodor, 2010)	desirousness, lustfulness, ambitions, greed, desire to control, desire for "war", lust, the inclination to acquire things (Deussen & Strauss, 1906) "lust after sensual pleasures", insatiable greed (Tagare, 1978) sexual desire (Larson & Bhattacharya, 1987) material desire (Goswami & Adhikari, 1988c) hankering for sense gratification, desire for honor, material riches and a family, greed, no desires for a higher elevation (Prabhupada, 1989) cupidity (Ganguli, 2005) greedy for the fruits of one's actions (Theodor, 2010)	desirousness, lustfulness, cravings, greed (Deussen & Strauss, 1906) indulging in false hopes (Goswami & Adhikari, 1988c) cupidity (Ganguli, 2005)
interests		inclination towards the mundane (Deussen & Strauss, 1906)	disinterest, taking pleasure in eating and similar activities, taking pleasure in good smells, clothes, amenities, lying and sitting, sleeping during the day, gloating over destruction (Deussen & Strauss, 1906) disinterest in the eternal spirit (Prabhupada, 1989)
values	knowing what should be done and what not (Prabhupada, 1989) valuing silence, stillness, caring for nature (Kumar, 2007)	ego and desire misrepresent the truth to serve their own purpose (Maheshwar, 1978) not being able to distinguish between irreligion and religion and what should be done and what not (Prabhupada, 1989) valuing speed, extravagance, prestige, power, technical solutions, comfort, convenience, paying lip service to justice and fairness, value nature only in regard to its usefulness to humans (Kumar, 2007)	devoid of morality (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) considering wrong to be right (Prabhupada, 1989)
goals	accepts status quo, no strong ambition (Ranade, 1994) seeking end of suffering, enlightenment for others (Kumar, 2007)	fame & wealth (Tagare, 1978) concerned to make the world more and more materially comfortable (Prabhupada, 1989) seeking enlightenment for oneself (Kumar, 2007)	no ambition (Ranade, 1994) disregard toward own ability to accomplish a goal (Theodor, 2010)
beliefs	faith, aimless cult (Deussen & Strauss, 1906) possibility of understanding *bhakti*-yoga (Prabhupada, 1987d) favorable *guna* for spirituality (Goswami & Adhikari, 1988b) faith in spiritual life	difficult to understand or appreciate God (Prabhupada, 1987d) "seeking heavenly blessings for prosperity" (Tagare, 1978, p. 2077) faith in fruitive work (Goswami & Adhikari, 1988c) worship of God to get a	faithlessness, ignorant faith (Deussen & Strauss, 1906) religious neglect, atheism (Hume, 1962, as quoted by Suneetha & Srikrishna, 2009) difficult to understand or appreciate God (Prabhupada, 1987d) faith in irreligious actions

	(Goswami & Adhikari, 1988c) worship of God out of duty (Prabhupada, 1989) religious piety (Theodor, 2010)	material benefit (Prabhupada, 1989) incredulousness (Ganguli, 2005) wandering from one spiritual practice to another (Kumar, 2007)	(Goswami & Adhikari, 1988c) reluctant to advance in spiritual understanding, worship without regard for scripture (Prabhupada, 1989)
spirituality	senses detached from matter, detachment from material mind (Goswami & Adhikari, 1988c) enlightened, spiritual, loving, compassionate (Frawley & Summerfield Kozak, 2001) emancipation from attachments, indifference, renunciation, freedom from the idea of "I" and "mine" (Ganguli, 2005)	manipulative, ambitious, egoistic, passionate (Frawley & Summerfield Kozak, 2001)	harmful, unaware, deceptive, perverted, criminal (Frawley & Summerfield Kozak, 2001)
expectations	freedom from expectations (Ganguli, 2005)		false expectations (Goswami & Adhikari, 1988c)
choice behavior	freedom from doubts (Deussen & Strauss, 1906) right decisions (Ranade, 1994) certainty (Ganguli, 2005) wisdom, discrimination (Bryant, 2009)	inconsideration, delusion, cockiness, doubts, rashness (Deussen & Strauss, 1906) false decisions (Ranade, 1994) hesistancy, doubt (Ganguli, 2005)	inconsideration, delusion, not discriminating, indecisiveness, rashness, thoughtlessness (Deussen & Strauss, 1906) false decisions (Ranade, 1994) not knowing what to do, heedlessness (Ganguli, 2005) delusion (Bryant, 2009) not considering future consequences or loss (Theodor, 2010)
way of dealing with success and/or failure	maintaining enthusiasm in success and failure (Theodor, 2010)	happy with success, distressed by failure (Prabhupada, 1989)	
activity	inactivity, tirelessness (Deussen & Strauss, 1906) striving for balance (Frawley, 1997) enthusiasm, absence of laziness (Ganguli, 2005)	slackness, aversion, activity itself, strain (Deussen & Strauss, 1906) impulse to activity, urge to work (Maheshwar, 1978) rigidity, perspiration (Larson & Bhattacharya, 1987) too much activity (Goswami & Adhikari, 1988c) hard work, intense endeavor (Prabhupada, 1989) hyperactivity (Buhrman, 1997) excessive activity, danger of burnout (Frawley, 1997) obsessively active (Buhrman, 2005) want of tranquility, fatigue, toil (Ganguli, 2005) energetic endeavor, power (Bryant, 2009) great effort, excessive endeavours (Theodor, 2010)	lethargy, sleep, slackness, aversion, exhaustion, rigidity, overactivity, sluggishness (Deussen & Strauss, 1906) incapacity, negligence of action (Maheshwar, 1978) sleep, inactivity, sloth, extreme idleness, sleepiness (Larson & Bhattacharya, 1987) chronic fatigue (Goswami & Adhikari, 1988c) indolence, sleep, laziness, no endeavor although capacity is there (Prabhupada, 1989) lack of motivation (Buhrman, 1997) lack of will to live (Buhrman, 1998) attached to inactivity (Buhrman, 2005) lethargy, stillness, sleep manifest (Bryant, 2009) indolence (Theodor, 2010)

In summary, people with dominant *sattva* are said to have a strong motive to fulfill their duties in society. They do not harbor ulterior motives when helping others. Also, they can easily coordinate sub-functions of the psyche (emotion, cognition etc.) to attain their goals, in other words they are disciplined and determined. Another feature of a *sattvic* person is that he or she has few (or no) material desires or goals, and lives according to moral principles. *Sattvic* people are spiritually inclined and if they worship God they do so only for spiritual reasons and not in order to fulfill material desires. A person with prevailing *sattva* tends to make wise choices, harbors few or no doubts, and is able to stay enthusiastic independently from success or failure. He or she strives for a balance between activity and regeneration.

Correlations (Hopkins) between *sattva* and the NEO-PI-R subscale "self-discipline" (r = .6, p < .001) and "impulsiveness" (r = -.58, p < .001) confirm the assumption between *sattva* and self-discipline. The balanced use of energy of a person with dominant *sattva* may enable them to be more active than *rajasic* and *tamasic* persons: Hopkins' study shows that *sattva* correlated positively (r = .28, p < .05) with the "activity" extraversion subscale of the NEO-PI-R, whereas the correlation was negative for *tamas* (r = -.29, p < .05) and not significant for *rajas*. Also, *sattva* correlated with the scale conscientiousness (r = .53, p < .001). Daftuar and Anjuli (1997) found a correlation between *sattva* and organizational commitment (r = .53, p <.05). Another consistent result is that persons who regularly recite the *Bhagavad-gita*, which focuses on spiritual topics, have significantly higher scores on *sattva* than persons who do not recite the *Gita* (Anjana & Raju, 2001).This is further confirmed by a correlation between *sattva* and Underwood and Teresi's (2002) Daily Spiritual Experience Scale (r = .41, p < .01; Stempel et al., 2006). Also Bhal and Debnath (2006) report a positive relationship between *sattva* and spirituality (r = .34, p < .01) measured with the scale developed by MacDonald (2000); however, *sattva* did not correlate significantly with all subscales. Additionally, Bhal and Debnath (2006) found a positive relationship between *sattva* and an idealistic ethical orientation (r = .26, p < .01).

A person with prevailing *rajas* is said to be mainly motivated to fulfill his or her personal desires and to attain prestige and power. Due to strong hankerings he or she sometimes has difficulties keeping up his or her determination and discipline. *Rajasic* people have strong desires for material pleasure and in its pursue; they have difficulties acting according to moral principles and will neglect them if they compromise their enjoyment. They want to be wealthy and famous. If they dedicate themselves to spirituality or religion they do so in order to attain material benefits from it. They are rash in decision-making and often have doubts. *Rajasic* people are overly active and do not consider a moderate use of their energy.

Hopkins reports a negative correlation between *rajas* and conscientiousness (r = -.3, p < .001). Anjana and Raju's (2001) comparison shows that non-reciters of the *Bhagavad-gita* have higher scores on *rajas* than *Bhagavad-gita* reciters, indicating that persons with *rajas* are not particularly interested in spirituality. Stempel et al. (2006) report similar findings: *rajas* correlated negatively with daily spiritual experiences (r = -.41, p < .01). Bhal and Debnath (2006) found no significant correlation between *rajas* and spirituality. Elankumaran (2004) compared the amount of job involvement of persons with dominant *sattva, rajas* or *tamas* and found that persons with dominant *sattva* and *rajas* had a significantly higher level of job involvement than persons with dominant *tamas*.

People with dominant *tamas* are expected to have difficulties motivating themselves for constructive activities. If *tamas* is very strong they will consciously harm others. Although their life-style does not benefit them they leave things as they are. Dominant *tamas* leads to a lack in self-control, high expectations and strong desires. *Tamasic* people do not care for ethics and are generally not interested in spirituality. They are indecisive and do not think of the consequences of their decisions. Concerning their level of activity *tamasic* persons are lazy and have a strong lack of energy and enthusiasm.

As for *rajas*, empirical results hint at the spiritual indifference of persons with dominant *tamas:* non-reciters of the *Bhagavad-gita* have higher scores on *tamas* than *Bhagavad-gita* reciters (Anjana & Raju, 2001) and *tamas* correlates negatively with daily spiritual experiences (r = -.46, p < .01; Stempel et al., 2006). In addition, Bhal and Debnath (2006) found a negative correlation between *tamas* and an idealistic ethical orientation (r = -.25, p < .01). Hopkins reports a negative correlation between *tamas* and conscientiousness (r = -.58, p < .001). Both *rajas* and *tamas* correlated negatively with the NEO-PI-R subscale "self-discipline" (*rajas:* r = -.42, p < .001; *tamas:* r = -.57, p < .001) and positively with the subscale "impulsiveness" (*rajas:* r = .35, p < .01; *tamas:* r = .6, p < .001), although both correlations are stronger for *tamas*.

2.4.4 Social Variables

What follows is a list of how the *gunas* manifest in social variables (Table 4). What remains inconclusive here is that the *Mahabharata* (Deussen & Strauss, 1906; Ganguli, 2005) lists pride as an indicator for all three *gunas* and doesn't offer any further explanation; therefore the reasons for this remain unclear. It is reasonable to assume that, according to this source, the pride will differ in its quality, but how it differs is not addressed.

Table 4 Symptoms of the *Gunas* in Social Variables

	sattva	**rajas**	**tamas**
attitudes toward oneself	self-less, not boasting, pride (Deussen & Strauss, 1906) complex free (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) "[..] may not consider themselves sattvic or claim to be sattvic." (Kumar, 2007, p. 23) freedom from egoism, confidence, humility (Ganguli, 2005) freedom from self-absorption (Theodor, 2010)	pride, egoism, selfishness (Deussen & Strauss, 1906) arrogance (Tagare, 1978) dishonesty, vanity (Larson & Bhattacharya, 1987) being fond of hearing oneself praised, false pride, "considering oneself different and better than others… advertising one's own prowess" (Goswami & Adhikari, 1988c, p. 561) boastfulness of speech, desire of concealment, ostentation, haughtiness (Ganguli, 2005) exaggerated ego-notion (Theodor, 2010)	pride, overestimating one's competences and knowledge (Deussen & Strauss, 1906) vanity (Larson & Bhattacharya, 1987) "do not like to be responsible for their lives" (Frawley, 1997, p. 35) presumption of knowledge in ignorance, haughtiness, boastful assertions of performance when there has been no performance (Ganguli, 2005)
behavior & attitudes toward others	leadership, faith, non-damaging, gentleness, straight-forwardness, non-enviousness, interest for others, compassion for all beings, benevolence, generosity, not wishing ill to anyone, not boasting, placability, chastity, giving and accepting gratuitously (Deussen & Strauss, 1906) hospitable, equally favorably disposed to all (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) giving for the sake of giving (Maheshwar, 1978) charity, modesty (Tagare, 1978) agreeableness, kindness, honesty, modesty, propriety, compassion, straight-forwardness, respect, forgiveness (Larson & Bhattacharya, 1987) not expecting anything in return (Prabhupada, 1989) absence of cruelty, compassion to all creatures (Ganguli, 2005) appreciative, affirmative (Kumar, 2007) tolerance, honesty (Theodor, 2010)	arrogance, non-compassion, defamation, termagancy, selfishness, inhospitableness, hostility, cruelty, robbery, conflict, harshness, leadership, to argue, violence, conflict, quarrel, envy, gossiping, egoism, protection, imprisonment, verbal abuse, pointing out the weaknesses in others, wrong charity, criticizing, praising, superiority, rape, caring, obedience, service, support, preferential treatment, belittlement, honoring, gossip (Deussen & Strauss, 1906) secretiveness (Hume, 1962, as quoted by Suneetha & Srikrishna, 2009) ridiculing others (Tagare, 1978) blame, dishonesty, murder, malice, envy, hatred, animosity, jealousy, rigidity, wickedness, deception, disgrace (Larson & Bhattacharya, 1987) "seek power over others" (Frawley, 1997, p. 35) expecting something in return (Prabhupada, 1989) vindictiveness, ostentatious charity, exhibition of manliness, disposition to revile, injuring others, quarrel, false speech (Ganguli, 2005) deviousness, cantankerousness (Michel, 2006) impress, make an impact (Kumar, 2007)	arrogance, unfairness, mean actions, meanness, unfriendliness, egoism (Deussen & Strauss, 1906) jealousy (Hume, 1962, as quoted by Suneetha & Srikrishna, 2009) insolent contempt for others, especially superiors (Maheshwar, 1978) quarrelsomeness (Tagare, 1978) infidelity, crookedness (Larson & Bhattacharya, 1987) insensitivity, allow others to dominate them (Frawley, 1997) cruelty, hostility (to all creatures), incapacity of association, frequently speaking ill of others (Ganguli, 2005) malevolence (Michel, 2006) attacking to defend oneself (Kumar, 2007) disregard to injury to others (Theodor, 2010)
style of communication	dialogue, based on trust, mutual understanding and	diplomacy, concealed fixed position, concealed self-interest,	monologue, fear of losing, blind faith in

	exploration, with open heart and mind, reaches compromise, "There is no fixed position, no dogma, no desire to convert; rather there is a desire to reach a stage which is respectful to all sides and honours the intrinsic qualities of every position, making dialogue a conversation among equals." (Kumar, 2007, p. 26)	desire to convince and win through argument or bribery, avoiding confrontation and breakdown of communication, ego is massaged, "[…] everyone is made to feel important and the red carpet is rolled out." (Kumar, 2007, p. 26)	own correctness, threatening, insulting, denigrating, imposing brute force, justifying errors, never recognizing errors, difficulty with apologizing (Kumar, 2007)
norms & reaction to violating them	having a sense of shame, good conduct (Deussen & Strauss, 1906) avoiding unbecoming acts (Tagare, 1978) embarrassment at improper action (Goswami & Adhikari, 1988c) righteousness (Ganguli, 2005)	shamelessness, lack of righteousness, theft, damage (Deussen & Strauss, 1906) policy heedlessness (Ganguli, 2005)	unfairness, nihilism (Deussen & Strauss, 1906) violation of rules of conduct (Ganguli, 2005) shamelessness (Michel, 2006)
duty/ies	dedication to one's duties, unabbreviated and gratuitous fulfillment of one's duties (Deussen & Strauss, 1906) devoted to religious, social and moral duties (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) no doubts in one's activities, "neither hateful of inauspicious work nor attached to auspicious work" (Prabhupada, 1989, p. 803) performance for its own sake without interest in the fruits (Theodor, 2010)	non-performance out of bodily discomfort (Prabhupada, 1989) non-performance out of fear of suffering (Theodor, 2010)	distaste for duties (Deussen & Strauss, 1906) not acting out of attachment to inaction (Maheshwar, 1978) non-performance out of illusion (Theodor, 2010)
behavior of others	experiences love, praise, honor and help from others (Gupta, 1977, as quoted by Mohan & Sandhu, 1986)		

All in all, people with dominant *sattva* are expected to have an unperturbed, realistic view of themselves. They are said to be complex free, humble, confident and not self-absorbed. They have a well-meaning attitude toward others, which shows itself in straight-forwardness, kindness, generosity and affection. *Sattvic* people feel committed to laws and conventions and react with shame if they do something which contradicts laws or their ideals. They are dedicated to their duties and experience support from others.

Sharma (1999) examined the relation between self-concept and the *gunas* and found that *sattva* correlated with a positive view of oneself ($r = .56$, $p < .01$). Stempel et al. (2006) report a negative correlation between *sattva* and feelings of personal inferiority and inadequacy ($r = -.29$, $p < .05$). *Sattvic* people's kind attitude towards others is supported by a positive

correlation between *sattva* and agreeableness (r = .49, p < .001; Hopkins) and the extraversion subscale "warmth" of the NEO-PI-R (r = .51, p < .001; Hopkins), which measures friendliness towards and interest in others. Further NEO-PI-R subscale correlations (Hopkins) indicate that *sattvic* people are not socially anxious (r = -.56, p < .001), are dutiful (r = .59, p < .001), assertive (r = .36, p < .01), concerned for others' welfare (r = .59, p < .001), tender minded toward others (r = .42, p < .001), compliant (r = .33, p < .01), straightforward (r = .46, p < .001); and that they believe in the sincerity of others (r = .65, p < .001). In Archana Das and Venu Gopal's study (2009) *sattva* correlated negatively with the subscales rule-breaking (r = -.33, p > .05) and aggressive behavior (r = -.19, p > .05) of the Adult Self Report. Kaur & Sinha (1992) found that *sattva* correlates with a higher leader-member exchange score (r = .14, p < .05), which indicates the closeness of the relationship between an employee and supervisor. Furthermore, they found a positive correlation between *sattva* and an orientation towards the protestant work ethic (r = .21, p < .01). Sitamma (2005) summarizes that *sattva* correlates positively with introversion and negatively with extraversion. Conflicting with this, *sattva* correlated positively with extraversion (r = .23, p < .01) in Hopkins' study.

When *rajas* dominates, people are said to be proud and arrogant. They may support others, if it contributes to their goals; otherwise they are critical and harsh toward others. They have friends, but only as long as they can benefit materially from the relationship. *Rajasic* people do not feel very committed to laws and conventions and are not ashamed if they break them. They try to avoid unpleasant experiences and become neglectful in performing their duties if that would require undergoing personal discomfort. In Sharma's study *rajas* was also correlated with a positive view of oneself (r = .45, p < .01). Hopkins reports a negative correlation between *rajas* and the NEO-PI-R subscale "modesty" (r = -.25, p < .05). *Rajas* correlated with intrusive behavior (r = .21 , p > .05) in Archana Das and Venu Gopal's study (2009). Again, there are conflicting results concerning extraversion: According to Sitamma's (2005) summary, *rajas* correlates positively with extraversion. Hopkins, however, found that *rajas* correlates negatively with extraversion (r = -.24, p < .01) and agreeableness (r = -.5, p < .001).

A person with dominant *tamas* is also described as proud and boastful, but to a greater degree than the *rajasic* person. *Tamasic* persons lie about their accomplishments to receive honor. They are insensitive and cruel and do not consider if their behavior injures others. Like people with dominant *rajas* they violate laws and conventions and are not ashamed of it. They have a strong dislike for performing their duties because they are rather inactive. This is supported by the negative correlation between *tamas* and an orientation towards protestant

work ethic (r = -.2, p < .01) reported by Kaur and Sinha (1992). Hopkins reports negative correlations between *tamas* and extraversion (r = -.37, p < .001) and agreeableness (r = -.46, p < .001) and the NEO-PI-R subscale "assertiveness" (r = -.42, p < .001). Archana Das and Venu Gopal (2009) found correlations between *tamas* and the Adult Self Report subscales withdrawn (r = .41, p < .01), aggressive behavior (r = .56, p < .01), rule-breaking (r = .56, p < .01) and intrusive behavior (r = .44, p < .01). In addition, *tamas* correlated with the Brief Symptom Inventory subscale measuring feelings of personal inferiority and inadequacy (r = .31, p < .05; Stempel et al., 2006).

Rajas and *tamas* again had very similar correlations to the subscales of the NEO-PI-R in this variable group in Hopkins' study. *Rajasic* and *tamasic* people were more socially anxious (*rajas:* r = .36, p < .01; *tamas:* r = .55, p < .001), less friendly and interested in others (*rajas:* r = -.4, p < .001; *tamas:* r = -.45, p < .001), trusted less in the sincerity of others (*rajas:* r = -.55, p < .001; *tamas:* r = -.53, p < .001), were less straightforward (*rajas:* r = -.41, p < .01; *tamas:* r = -.36, p < .001), less altruistic (*rajas:* r = -.46, p < .001; *tamas:* r = -.52, p < .001), less sympathetic toward others (*rajas:* r = -.37, p < .01; *tamas:* r = -.33, p < .01) and less dutiful (*rajas:* r = -.51, p < .001; *tamas:* r = -.47, p < .001).

This concludes the delineation of the indicators for the *gunas* in the psychological factor groups. Two studies have investigated the relationship between the *gunas* and psychological illness in general which confirm the assumption that *rajas* or *tamas* are related to psychological illness. Lakshmi Bai, Murthy and Nagalakshmi (1975) compared people with a clinically relevant mental disorder to those without a diagnosis and found that the former had significantly higher scores on *rajas* and *tamas*. Stempel et al. (2006) found significant correlations between the global severity index of the Brief Symptom Inventory and *rajas* (r = .33, p < .05) and *tamas* (r = .51, p < .01) respectively (the negative correlation with *sattva* was not significant (r = -.25, p > .05).

2.4.5 Physical Variables

In the following table (Table 5) the symptoms of the *gunas* in physical variables is listed. People with dominant *sattva* are clearly most healthy.

Table 5 Symptoms of the *Gunas* in Physical Variables

	sattva	rajas	tamas
physical variables	frame is light, senses acute (Colebrooke & Wilson, 1837) light limbs (Larson & Bhattacharya, 1987) senses quickened, nervous being calm, filled with ease and clarity (Maheshwar, 1978) "generates a sense of lightness in	beautiful features (Deussen & Strauss, 1906) self-adornment, ostentation (Frawley & Summerfield Kozak, 2001)	body is sluggish and heavy, senses obtuse (Colebrooke & Wilson, 1837) lack of flexibility (Deussen & Strauss, 1906) insensibility, ugliness, sense of limbs being heavy (Larson & Bhattacharya,

	the limbs and clarity of the senses." (Larson & Bhattacharya, 1987, p. 215)		1987) obesity, sloppy appearance (Frawley & Summerfield Kozak, 2001)
health	vitality (Colebrooke & Wilson, 1837) health itself, sense of well-being (Deussen & Strauss, 1906) hereditary good health (Ranade, 1994) harmony, balance (Frawley, 1997)	pain (Deussen & Strauss, 1906) "unhealthy condition of the working physical organs" (Goswami & Adhikari, 1988c, p. 570) disequilibrium (Frawley, 1997) indigestion, high blood pressure (Verma, 1997) nervousness, irregular breathing (Buhrman, 2005) heart attacks, cancer, auto-immune diseases (Chopra in Kumar, 2007) power (Bryant, 2009)	low energy (Frawley & Summerfield Kozak, 2001) lassitude (Ganguli, 2005)
sleep	refreshing, upon awakening one feels lucid (Bryant, 2009)	insomnia (Buhrman, 1997) disturbances (Verma, 1997) restless, upon awakening one feels confused (Bryant, 2009)	to sleep more than necessary (Prabhupada, 1989) upon awakening one feels tired and sluggish (Bryant, 2009)

With regards to variables of the organism strong *sattva* is indicated by acute senses, a calm nervous system and a feeling of having a light body. Health or well-being is a symptom of *sattva*. When *sattva* dominates in sleep one feels refreshed upon awakening. Rani and Rani (2009) investigated the relationships between the *gunas* and physiological measures (heart rate, galvanic skin response, blood pressure and lung functions). They did not find many significant correlations. For *sattva* there was a significant negative correlation with diastolic blood pressure ($r = -.35$, $p < .05$).

A person with dominant *rajas* is said to care more for short-term pleasures and looks than for health. It is suggested that too much *rajas* leads to various diseases like insomnia, heart attacks, auto-immune diseases or cancer. When *rajas* dominates in sleep, it becomes restless and upon awakening one feels confused. *Rajas* has been found to correlate with systolic ($r = .41$, $p < .05$) and diastolic blood pressure ($r = .58$, $p < .01$; Rani & Rani, 2009).

Tamasic persons are expected to have an inflexible, heavy body and suffer from a lack of energy. When *tamas* dominates sleep one feels tired upon awakening. Archana Das and Venu Gopal (2009) report a correlation between *tamas* and somatic problems ($r = .45$, $p < .01$).

A few researchers investigated gender differences, but the results are inconsistent. Uma, Lakshmi and Parameswaran (1971, as quoted by Sitamma, 2005) report that women had higher scores on *tamas* than men. Mohan and Sandhu (1986) found that women had significantly higher scores on *sattva* and lower scores on *rajas* than men. Marutham (1992, as

quoted by Sitamma, 2005) found that on average the dominant *guna* for men was *rajas*, whereas the average dominant *guna* in women was *sattva*. Stempel et al. (2006) and Bhal & Debnath (2006) found no correlation between any of the *gunas* and gender. In the sample of Stempel et al. (2006) age was positively correlated with *sattva* (r = .41, p < .01) and negatively with *rajas* (r = -.41, p < .01) and *tamas* (r = -.46, p < .01).

2.4.6 Variables of the Environment

Table 6 shows variables of the environment according to the influences of the *gunas* (Westhoff (2005) also groups the financial situation amongst these variables). After the lengthy description of the influence of the *gunas* on different psychological and physical variables, this factor group may be surprising. What does the particular strength of each *guna* in a person have to do with the person's environment? As detailed above, the *gunas* are said to be the fundamental components of all matter, therefore they not only comprise the psyche but also the environment. It is claimed that people with the respective dominating *guna* are attracted to be in places where the same *guna* dominates. Therefore, this categorization of different environments where humans reside may be useful indicators for the diagnosis of the *gunas*.

Table 6 Living Conditions Categorized According to the *Gunas*

	sattva	**rajas**	**tamas**
environment	brightness (Deussen & Strauss, 1906) abundance (Larson & Bhattacharya, 1987) living in the forest (Prabhupada, 1987d) simplicity (Prabhupada, 1989)	city life (Prabhupada, 1987d)	gambling houses (Tagare, 1978) brothels, drinking houses (Prabhupada, 1987d)
property	"food" obtained without difficulty (Goswami & Adhikari, 1988c) lifestyle doesn't demand much of the natural resources, life is about *being* not *having* (Kumar, 2007)	as much as possible (Prabhupada, 1989) don't mind waste, excessive demand on natural resources (Kumar, 2007)	poverty (Larson & Bhattacharya, 1987)

To sum up, people with dominant *sattva* like to reside in bright and simple surroundings. They are not overly concerned with their possessions and are satisfied with whatever they can attain without over endeavoring. People with dominant *rajas* like to live in the hustle of big cities and accumulate a lot of property. When *tamas* prevails, people are attracted to, according to the Indian texts, "casinos and brothels".

2.4.7 Behavior

The following table (Table 7) lists indicators of the *gunas* for general behavioral categories. Speaking in terms of the behavioral equation, this table discusses the outcome of the different factor groups, that is, behavior itself. Although "competences and virtues" could also be grouped with other variables, we chose to list them here in order to do justice to the different components that play a role in displaying a virtue or competence.

Table 7 Symptoms of the *Gunas* in Behavior

	sattva	**rajas**	**tamas**
actions	purity, aimless actions and endeavors, fulfilling vows (Deussen & Strauss, 1906)	unjust, over-endeavor for aims, purchase and sales, politics, all actions based on desire, heroism (Deussen & Strauss, 1906) engagement in actions which bear fruits (Prabhupada, 1989) acts with earthly purposes (Ganguli, 2005) discrepancy between words and deeds (Kumar, 2007)	mean/bad actions, excessive talking (Deussen & Strauss, 1906) whimsically, without purpose (Prabhupada, 1989) acts springing from wrath, fraught with cupidity, vileness of behavior (Ganguli, 2005)
results of actions	non-damaging (Deussen & Strauss, 1906) pure (Prabhupada, 1989) success (Ganguli, 2005) lead to spotless results, joy, end of suffering (Theodor, 2010)	temporary, unstable, misery (Prabhupada, 1989) uncertain (Bhanu Swami, 2003) lead to suffering, harmful (Theodor, 2010)	foolishness, good neither for oneself, nor for others (Prabhupada, 1989) vain, uselessness (Ganguli, 2005) result in foolishness (Theodor, 2010)
health behavior	good lifestyle, self-care (Deussen & Strauss, 1906) cleanliness (Gupta, 1977, as quoted by Mohan & Sandhu, 1986) determination to avoid harmful but momentarily pleasing things, being conscious of one's limits (Ranade, 1994) everything which is calming and pure (Deussen & Strauss, 1906) takes care of him-/herself (Frawley, 1997) gentle exercise (Frawley & Summerfield Kozak, 2001) determination to sustain mind, life air and senses (through yoga), practices which start like poison, but gradually resemble nectar (Theodor, 2010)	follows healthy lifestyle if convinced (Ranade, 1994) no desire to take the time to recuperate (Frawley, 1997) harsh exercise (Frawley & Summerfield Kozak, 2001) difficulty calming down mentally and physically (Buhrman, 2005) overeating (Michel, 2006) practices which begin like nectar, but gradually resemble poison (Theodor, 2010)	insatiable when eating and drinking, unregulated eating (Deussen & Strauss, 1906) intoxication (Larson &Bhattacharya, 1987) taking shelter in intoxication (Prabhupada, 1989) everything which is unclear, incomprehensible and incognizable (Deussen & Strauss, 1906) careless in health (Ranade, 1994) lack of exercise (Frawley & Summerfield Kozak, 2001) not wanting to abandon intoxication, fear, dejection, sleep, sorrow (Theodor, 2010)
sleeping behavior	"rising early in the morning" (Prabhupada, 1987e) wakefulness (Goswami & Adhikari, 1988c)	dreams (Goswami & Adhikari, 1988c)	sleeping during the day (Deussen & Strauss, 1906) rising from bed late, staying awake at night (Goswami & Adhikari, 1988b) deep sleep (Goswami & Adhikari, 1988c)

preferred food	juicy, fatty, wholesome (Prabhupada, 1989) increases strength of will, juicy, tasty, mild, with oil, long lasting effect, beneficial to organs, rice, grains, milk, wheat, sugar (Bhanu Swami, 2003) increases satisfaction, health, strength, lifespan and happiness; tasty, substantial, mild and pleasant; vegetables, fruits, fresh milk, beans (Theodor, 2010)	too bitter, reduce mucus in stomach (Prabhupada, 1989) produces pain while eating, afterwards sorrow and at last disease (Bhanu Swami, 2003) causes suffering, disease and misery; spicy, scorching, burning, sour, salty, too hot, pungent, too dry; fried foods, mixed nuts, sorts of cheese (Theodor, 2010)	prepared long before consumption (> 3 h), decomposed, bad odor (Prabhupada, 1989) putrid, stale, tasteless, leftovers; meat, eggs, fish, alcoholic drinks (Theodor, 2010)
competences & virtues	truthfulness, innocence, gentleness, cleanliness, not boasting with detachment (Deussen & Strauss, 1906) mercy, renunciation, contentment, truthfulness (Tagare, 1978) kindness, honesty, modesty, patience, compassion, simplicity, sweetness, forbearance, endurance, mildness (Larson & Bhattacharya, 1987) generosity, simplicity, virtue (Goswami & Adhikari, 1988c) loyalty (Frawley & Summerfield Kozak, 2001) righteousness, sincerity, liberality, faith, nobility, confidence, forgiveness (Ganguli, 2005)	impatience, greed, harshness, deception, cruelty (Deussen & Strauss, 1906) dishonesty (Larson & Bhattacharya, 1987) forbidden acts, cleverness, dexterity (Ganguli, 2005)	helplessness, miserliness, impatience (Deussen & Strauss, 1906) intolerance, miserliness, deceitfulness, hypocrisy (Tagare, 1978) crookedness, miserliness (Larson & Bhattacharya, 1987) wickedness, unrighteousness, illiberality, absence of faith, evilness, crookedness, senselessness, unforgiving (Ganguli, 2005)

In general the behavior of a person with dominant *sattva* is described to lead to positive results like joy and success. People with prevailing *sattva* have a healthy life-style and prefer food that increases health. *Sattvic* people are highly virtuous. *Rajas* energizes actions for worldly purposes with temporary outcomes. Persons with dominant *rajas* find it difficult to care for their health, although they do it partially, and they prefer unhealthy food. *Tamasic* people do not care for their health at all; they do not exercise and consume too much alcohol and other drugs. They eat unhealthy food that is not freshly prepared. *Rajasic* and *tamasic* persons are not particularly virtuous.

All in all, the *guna* profiles are mostly coherent in themselves and distinct from another. In some cases the difference between the indicators for *rajas* and *tamas* are subtle. For example both, people with dominant *rajas* and *tamas*, tend to neglect their duties; however they do so for different reasons. *Rajasic* persons neglect their duties because they want to avoid discomfort, whereas *tamasic* persons are additionally overly fond of being inactive.

Although there are inconsistencies, all in all, the first empirical findings support the *tri-guna* model: there is a relatively high congruence between theoretical assumptions and empirical evidence. Some or all of the inconsistent findings may result from the differing and partly suboptimal operationalizations of the *gunas* in the different studies.

After this detailed characterization of the indicators for *sattva, rajas* and *tamas* respectively, we would like to remind the reader of the context in which we are investigating the *tri-guna* model: how can this contribute to well-being? By now it is obvious that according to the *tri-guna* model, thoughts, feelings and behavior are influenced by three types of energies. All three are necessary for healthy functioning, however to different degrees. If *rajas* and *tamas* get too strong, health deteriorates. Thus, in order to increase well-being, it is necessary to find interventions which increase *sattva,* and decrease excessive *rajas* and *tamas.* As the different correlates of the *gunas* show, there is reason to hypothesize that a relative dominance of *sattva* could lead to well-being. Sitamma (2005) remarks that it is necessary to search for methods which will increase *sattva* and to describe the characteristics of such interventions. The aim of the next paragraph is to review such possible interventions. The classical Indian texts which discuss the *tri-guna* model mention many possible interventions. Knowledge of possible interventions permits testing their effectiveness, alone or in packages.

2.5 Interventions to Increase Sattva and Decrease Rajas and Tamas

The general mechanism of increasing the influence of a particular *guna* is to align one's behavior (whenever possible) with the action modes of this *guna* that are listed in detail above. It is claimed that by cultivating a particular *guna* (internally and externally), one causes it to manifest/increase within oneself. In order to increase *sattva* means that "One can strengthen the mode of goodness by cultivation of those things that are already situated in goodness […]. […] Thus, by choosing food, attitudes, work, recreation, etc., strictly in the mode of goodness, one will become situated in that mode." (Goswami & Adhikari, 1988c, p. 4).

Therefore, the first step in increasing *sattva* would be to acquire knowledge of *sattvic* behavior and then try to adjust one's behavior to this. Or as Theodor (2010, p. 10) puts it in his introduction to the *Bhagavad-gita,* "For this purpose, various characteristics of the *gunas'* bondage are delineated, and these enable a process of self-examination or self-study. Consequently, one is able to change one's habits for the purpose of raising oneself on this ladder of the *gunas*." Theodor uses the word "bondage" for the action modes of the *gunas,* since the influence of the *gunas* is so strong that they force a particular mode of behavior, unless the individual actively tries to change his or her life-style.

This relatively simple mechanism of increasing the influence of *sattva* explains why some of the *de*scriptions of *sattvic* behavior exactly correspond to *pre*scriptions for increasing it. For example the process of yoga given by Patanjali recommends practicing celibacy and truthfulness for increasing *sattva*, whereas the *Bhagavad-gita* lists these two qualities when describing the behavior of a *sattvic* person. Another example for this principle is that foods mentioned as preferred food of persons with dominating *sattva* are the same as foods recommended for a *sattvic* diet.

There are some differences in opinion concerning the question of adopting *sattvic* behavior as being the best course of action for everyone, or whether they should act differently according to their dominating *guna.* For example, the *Bhagavata Purana* (Tagare, 1976b, p. 988) recommends, "He should vanquish *rajas* and *tamas* by *sattva*, […]." indicating that it is possible to increase *sattva* as a first step for anyone. Frawley (1997), however, suggests that people with dominating *tamas* should first increase the influence of *rajas* and then go on to develop *sattvic* qualities, while people with dominating *rajas* may immediately start to cultivate *sattva.* These recommendations can be harmonized by assuming that it is easier for *tamasic* persons to first develop *rajasic* than *sattvic* traits, although it is not impossible to immediately decrease the influence of *tamas* by strengthening *sattva*.

Once *sattva* is the dominant *guna,* or more prominent in an individual, the individual will naturally be more inclined to *sattvic* things, thoughts and behavior, all of which increase strength, prolong life, and further satisfaction and well-being (Maheshwar, 1978). A *sattvic* lifestyle becomes, so to say, natural and spontaneous (Bryant, 2009). Thus, this development in a way reinforces itself and it becomes easier to keep *sattva* prominent. As Bryant (2009, p. 141) describes, "[…], once the mind becomes stilled, its *sattvic* nature can manifest, as a result of which the qualities of *sattva,* insight and lucidity, also gradually manifest. These qualities, in turn, start to pervade all aspects of a practitioner's life […]." This reminds one of the notion in positive psychology that well-being develops in a positive up-ward spiral, one positive experience, behavior or trait furthering another.

In addition to the information given in the description of *sattvic, rajasic* and *tamasic* thinking and behavior (Tables 1–7) one can also find specific procedures and interventions meant to increase *sattva guna.* What follows is a review of possible interventions given in the traditional literature, which could be tested empirically with regards to their effectiveness.

As a general practice to increase the influence of *sattva,* it is recommended to practice yoga (Ranade, 1994). In the *Mahabharata* (Ganguli, 2005, Santi Parva, Section CCXVII) it is even stated, "Whatever acts are destructive of Passion [*rajas*] and Darkness [*tamas*] constitute

yoga in respect of its real character." suggesting that an essential purpose of yoga is to reduce *rajas* and *tamas*. Of course, this is a broad domain, as there are many kinds of yoga. For example many of the commentators to the *Yoga Sutras* of Patanjali remark that increasing *sattva* and decreasing the influence of *rajas* and *tamas* is a goal of Patanjali's yoga system (Braud, 2008; Bryant, 2009), and the *Bhagavat Purana* states that *sattva* can be maximized by the practice of *bhakti*-yoga (Tagare, 1976a).

However, increasing *sattva* is not actually the ultimate aim of any yoga process; it is mostly considered as an important helpful and intermediate step to attaining the ultimate goal (which is different from process to process, ranging from attaining liberation by freeing the *purusha* from its misidentification with matter, to additionally developing love of God). As Bryant (2009, p. 130) describes, "Cultivating the higher qualities of *sattva* is a continuous and constant requirement of the *yogic* path and spills over into all aspects of life's affairs and social interactions." Different yoga schools give recommendations on how to increase *sattva*. Generally, a yoga system might be considered as a package of interventions to increase *sattva*. In order to organize the practices by the following categorization, recommendations of different yoga processes like those of the *yamas* and *niyamas* have been isolated from their "package" and integrated in the following list of possible interventions. The next section discusses specific interventions which are claimed to enhance *sattva guna*.

2.5.1 Meditation

Meditation is depicted as an important activity to strengthen *sattva*. It is the heart of Patanjali's yoga process, "defined as keeping the mind fixed on any particular object of choice without distraction." (Bryant, 2009, p. lvii). Apart from this, *Ayurveda* recommends concentration exercises (Verma, 1997), singing of mantras and meditating daily to strengthen *sattva* and attain/keep mental peace (Ranade, 1994). Wolf & Abell (2003) examined the effects of *maha*-mantra meditation on the *gunas*, and found that it significantly increased *sattva* and decreased *tamas*.

2.5.2 Spiritual Awareness

As described above, according to *Sankhya* philosophy the light of the soul is said to reflect stronger in a *sattvic* psyche. This means a *sattvic* psyche is more capable of connecting to the spiritual source of energy, joy and love of the soul. This gives *sattvic* people the energy to act the way they do. The capability of the psyche to let the energy of the soul flow can be increased by practicing spiritual awareness.

Strengthening this awareness of the difference between matter and spirit is said to increase *sattva* (Ranade, 1994) and it provides the mindset required for other practices as well

(e.g. that of nonviolence). *Tamas* can be decreased by knowledge of the nature of the soul (Nilakantan, 1989). In practice this means frequently reminding oneself of the eternality of the self/the soul and the impermanence of the body and mind, and adjusting one's behavior to this awareness. Wolf (2008) advises us to cultivate spirituality in order to strengthen *sattva.* This kind of practice requires believing in the eternality of the self and seems to be reasonable only for people who believe in this.

2.5.3 Monitoring, Controlling and Restraining Oneself

An indispensable principle of a *sattvic* lifestyle is observing, controlling and restraining the activity of senses, mind and speech. This is one of the main functions of *sattva,* as Frawley (1999, p. 27) puts it, "Sattva is the neutral or balancing force, harmonizing the positive and negative, which oversees and observes." The *Maitrayana Upanishad* (Michel, 2006) declares: *sattva* is attained by *tapas* (restraint). To increase *sattva,* balance, and to avoid acting myopically it is necessary to avoid being carried away by the forces of *rajas* and *tamas* (Tagare, 1978). The *Caraka Samhita* (Sharma, 1994) has a section in which it describes health behavior, which according to Ranade (1994), strengthens the *sattvic* qualities of the mind. In this section, the *Caraka Samhita* also prescribes that one should be self-controlled. The *Bhagavad-gita* defines the restraint of senses, mind and speech in three verses. Sri Aurobindo summarizes these verses in relation to the *gunas*: "Here comes in all that quiets or disciplines the rajasic and egoistic nature and all that replaces it by the happy and tranquil principle of good and virtue. This is the askesis of the sattwic Dharma so highly prized in the system of ancient Indian culture. Its greater culmination will be a high purity of the reason and will, an equal soul, a deep peace and calm, a wide sympathy and preparation of oneness, a reflection of the inner soul's divine gladness in the mind, life and body." (Maheshwar, 1978, p. 217).

Patanjali lists *tapas,* austerity or restraint, as the first necessary practice of *kriya*-yoga, an action centered approach to the goal of *yoga* (chapter 2, first *sutra*). *Kriya*-yoga is especially relevant for people with dominant *rajas* or *tamas.* Bryant (2009, p. 170) explains "*Tapas* means the control of the senses – controlling the quantity, quality, and regularity of one's food intake, for example; the quality of what one listens to or reads or talks about – in other words, the "*sattvicizing*" of one's sensual engagements."

Vijnanabhiksu, a commentator to the *Yoga Sutras* of Patanjali, emphasizes that restraint should be of a gentle nature that doesn't weaken the mind or body (Bryant, 2009). This is important to note, otherwise the point of restraint – to increase the influence of *sattva* – is missed. The following three paragraphs discuss specific methods for restraining the senses, mind and speech.

2.5.3.1 Control of the Senses/ Body

The *Bhagavad-gita* (Theodor, 2010, p. 127) positively defines restraint of the body as "Worship of the gods, of Brahmins, of teachers and wise men as well as purity, honesty, celibacy and nonviolence, are said to be the austerity of the body." This clearly corresponds to and overlaps with recommendations in regard to social behavior and developing virtues. Celibacy is also an important part of Patanjali's yoga system (the fourth *yama*), as it helps cultivating spiritual awareness in opposition to engaging with the temporary body (Bryant, 2009). Furthermore, purity or external cleanliness is also recommended by Patanjali (*niyama* one), which Vyasa defines as cleaning the body and eating pure food (Bryant, 2009). With regards to eating, one can find lists of *sattvic* types of food in the *Bhagavad-gita* and texts on Ayurveda (e.g. Deshpande, 2003; Frawley, 2000). Ayurveda also gives prescriptions on how to eat in a *sattvic* way. Especially persons with dominating *tamas* should strictly avoid overeating (Buhrman, 1998). In addition, eating can be regulated by fasting (Jawa, 2002).

The *Bhagavat Purana* (Goswami & Adhikari, 1988c, p. 6) lists items which are especially relevant to *sattvic* sensual engagements: "According to the quality of religious scriptures, water, one's association with one's children or with people in general, the particular place, the time, activities, birth, meditation, chanting of mantras, and purificatory rituals, the modes of nature become differently prominent." Sridhara Swami (as quoted in Tagare, 1978) gives details on how these items are *sattvic*, for example a *sattvic* time is the early morning, best suited for meditation.

In order to *sattvicize* body and mind and to reduce *rajas* and *tamas*, Patanjali (Bryant, 2009) and Verma (1997) recommend practicing *asanas* of yoga (exercises for the body) and *pranayama* (breathing exercises). Ranade (1994) recommends regular exercise in general. Furthermore, the *Caraka Samhita* (Sharma, 1994) prescribes that one should stop exercising before one is fatigued. Deshpande, Nagendra and Raghuram (2008) investigated the effects of an eight-week practice of *asanas*, *pranayama* and meditation on the *gunas*, compared to an eight week program of physical exercise. Both the yoga group and the physical exercise group showed a significant increase in *sattva guna*, although the effect-size was greater in the yoga group. *Rajas* and *tamas* only decreased significantly in the physical exercise group. Rani and Rani (2009) compared *guna* scores of short-term (6 months to 2 years) and long-term (2–5 years) *hatha*-yoga practitioners from the same yoga center. As expected, the long-term practitioners had a significantly higher score on *sattva* and significantly lower scores on *rajas* and *tamas* than the short-term practitioners. Khema et al. (2011) found that *rajas* and *tamas* decreased significantly after four weeks of an "integrated approach to yoga therapy (IAYT)"

intervention which included *asanas*, *pranayama*, singing, meditation and lectures on stress-management, the four yoga paths and diet. The mean *sattva* score increased slightly, but not significantly.

Jawa (2002) describes techniques for strengthening mental health from the *Bhagavad-gita* and mentions two strategies for controlling the senses: restraining the senses and withdrawing the senses. Restraining the senses means to refrain from the activity of the sense(s) for a certain period of time, for example fasting, or not speaking. Withdrawing the senses refers to mentally withdrawing from sensory input/information by withdrawing one's attention from them. The latter strategy is especially important in situations in which certain sensory input needs to be tolerated.

2.5.3.2 Mind Control

For increasing *sattva* in the mind the *Caraka Samhita* (Sharma, 1994) recommends being optimistic, cheerful, devoted to knowledge and calm, and giving up habitual criticism and continued grief. One should not (regularly) remember one's "scandals" and not be exhilarated by success, or depressed by failure.

The definition of restraint of the mind of the *Bhagavad-gita* is: "Peace of mind, gentleness, silence, self-control and purification of one's existence are said to be the austerity of the mind." (Theodor, 2010, p. 127).

With regards to controlling and restraining the mind or rather thoughts, Patanjali's *yamas* and *niyamas* are crucial, for without practicing them the mind will not manifest *sattva*. All of the *yamas* and *niyamas* have an internal aspect to their practice relevant to the mind. Nonviolence (the first *yama*) for example includes giving up hatred and malice, the second *yama* (truth) is explained by Vyasa to entail keeping one's thoughts in correspondence to facts that can be perceived, inferred or which have been testified by others (Bryant, 2009). Refrainment from stealing (*yama* three) entails giving up all desires to steal, and ultimately even material desires themselves. Celibacy (*yama* four) requires giving up the tendency to see members of the opposite sex as objects of desire; and renouncing possessions (*yama* five) helps to cultivate a spirit of detachment from temporary matter. Hariharananda points out that "Hoarding wealth without sharing it is sheer selfishness […]." (Bryant, 2009, p. 247). Here we find another practice which quiets the egoistic and *rajasic* tendencies.

Niyama one – cleanliness – not only refers to external cleanliness, but according to Vyasa (Bryant, 2009) also to internal cleanliness. Internal cleanliness means to free oneself from "contamination" in the mind, which for example consists of pride, hatred, jealousy, attachment and vanity, according to the commentators on the *Yoga Sutras*. Bhoja Raja

mentions that the mind is cleaned by cultivating a friendly attitude towards all creatures (Bryant, 2009). *Niyama* two – contentment – "[…] manifests as disinterest in accumulating more than one's immediate needs in life [...] True happiness comes from contentment with whatever one has, not with thinking that one will be happy when one gets all that one desires. Even if there is some lack, says Sankara, one thinks, "It is enough." Or, as Hariharananda puts it, to avoid injury from thorns, one only has to wear one pair of shoes – one doesn't need to cover the entire earth with leather!" (Bryant, 2009, p. 253). Also Verma (1997) addresses the necessity of giving up greed and dissatisfaction. This leads to mental peace by removing the motor of the *rajasic* tendency for over-endeavor and hankering. The third *niyama* (austerity) also has a mental component, that of practicing tolerance in the face of physical discomfort. Patanjali also requires a theistic practice with his fifth *niyama* – devotion to God, which Vyasa interprets as offering all activities to God, without a desire for enjoying the fruits of this offering. Of course, in the context of modern times, this recommendation as part of a *sattvic* lifestyle can only be an optional part of any intervention, which is likely to be adopted or rather deepened by theists. Also Frawley (1997, p. 42) recommends spiritual practice to "[…] heal our relationship with God or the inner Self." Moreover, Frawley (1997) advises learning from suffering by considering it as life's arrangement for further spiritual growth and seeing the good in everything. Deussen and Strauss (1906) mention that a person with dominant *sattva* is aware of his or her autonomy, this indicates that increasing self-efficacy will enhance *sattva.* Kumar (2007) recommends keeping the mind focused on the present 80% of the time, thinking of the future 15 % and of the past only 5% of the time. Also, he advises developing a respectful, reverential worldview that recognizes the intrinsic value of life, understanding things the way they are and developing a non-judgmental attitude of accepting reality. Wolf suggests cultivating the mindset of satisfaction thinking that "I don't need to do or have anything to experience satisfaction, aliveness, courage, and clarity – because these qualities are who I am." (Wolf, 2008, p. 16), since according to the *guna* model it is the nature of the soul to be satisfied, and this nature can be uncovered by increasing *sattva*. This is based on a worldview that doing and having things we cherish follow being (in *sattva*), rather than worldviews which require having and doing certain things in order to experience satisfaction.

2.5.3.3 Speech Control

In regard to speaking, the *Caraka Samhita* (Sharma, 1994, p. 56) prescribes "[…] one should speak useful, measured, sweet and meaningful words; […]". Also, one should not lie or speak about the faults of others.

Similarly, in the *Bhagavad-gita* restraint of speech is defined as "Words that do not agitate others, and are truthful, pleasant and beneficial, as well as constant recitation of scriptures are said to be the austerity of speech." (Theodor, 2010, p. 127).

Recommendations for *sattvic* speaking can also be derived from Patanjali's *yamas* and *niyamas.* According to Patanjali and his commentators, a person striving for *sattva* should avoid using harsh words, speak the truth, avoid gossip and repeat *om* or devotional mantras. Verma (1997) advises to speak only as much as necessary and to be exact in one's choice of words. If one's work demands that one speak a lot, Verma recommends balancing this by remaining silent in the evening.

2.5.4 Behavior towards Others

A very important aspect of developing *sattva* concerns the social behavior. In addition to the description of *sattvic* behavior toward others in table 4, this paragraph lists concrete recommendations that are given separately from the description of *sattva guna* for ways to increase *sattva* by *sattvic* social behavior. These aspects might be of special importance.

The most important prescription is the first *yama* or prescription for a yogic lifestyle – that of remaining nonviolent towards all creatures, which, strictly speaking, also calls for a vegetarian diet (Bryant, 2009). It also entails being compassionate and empathetic toward others and is based on the practice of spiritual awareness, which means to consider every creature equally in regard to the spiritual self. The third *yama,* refraining from any kind of theft, also falls into the category of social behavior. Frawley (1997) advises letting go of individual sorrow, opening oneself to others' suffering and surrendering one's motivation and drive to the greater good by service and charity. Furthermore, *Ayurveda* offers elaborate recommendations of friendliness and ethical behavior to enhance *sattva:* one should be straightforward, attentive, generous, kind and gentle (Ranade, 1994). One should donate, entertain guests, be devoted to superiors and teachers, committed to compassion and friendship, and not start quarrels or create fear in others (Sharma, 1994). Also "[…] one should behave like kith and kin to all living beings, pacify the angry, console the frightened, help the poor, be truthful, peaceful, tolerant of others' harsh words […]" (Sharma, 1994, p. 57). The *Yoga Sutras* (Bryant, 2009) suggest different kinds of behavior for different people: the practicing yogi should befriend happy people, be compassionate towards those in distress, joyful towards pious persons and equanimous towards the impious. Bryant (2009, p. 129) explains, "By thus removing these traits of envy, desire to inflict harm, and intolerance, which are characteristics of *rajas* and *tamas*, the *sattva* natural to the mind can manifest."

2.5.5 Virtues

Developing virtues is described as a method to increase *sattva*. The virtues listed in the column for *sattva* in table 7 could constitute developmental goals for individuals wanting to further *sattva*. These are truthfulness, innocence, gentleness, cleanliness, not boasting with detachment (Deussen & Strauss, 1906), mercy, renunciation, contentment (Tagare, 1978), patience, compassion, simplicity, sweetness, forbearance, endurance, mildness (Larson &Bhattacharya, 1987), generosity, simplicity (Goswami & Adhikari, 1988c), loyalty (Frawley & Summerfield Kozak, 2001), righteousness, sincerity, liberality, faith, nobility, confidence and forgiveness (Ganguli, 2005). Special recommendations as prescriptions for enhancing *sattva* could be found for truthfulness (Bryant, 2009; Ranade, 1994) and patience (Ranade, 1994).

Swami (2005, p. 65) describes a way to develop *sattvic* virtues, which he calls "the principle of acting to attain a quality". He explains that by practicing virtuous, *sattvic* behavior, one automatically comes under the influence of *sattva guna*. This reflects the general mechanism of strengthening a particular *guna* mentioned above.

2.5.6 Style of Working

In one's work one should balance activity (energized by *rajas*) and inactivity (energized by *tamas*) (Verma, 1997). Excessive activity should be given up altogether (Verma, 1997). Furthermore, one should not try to accomplish too many things at once, not be too pedantic, not take up a task out of anger, joy or without inquiring about it and not procrastinate (*Caraka Samhita*, as quoted in Rhyner, 2003). It is advised to avoid hardships, not to work when one is sick, not to overburden oneself, and to act according to time and place (Ranade, 1994).

2.5.7 Routines

Routines are frequently recommended in Ayurvedic literatures as a tool for enhancing *sattva* (Ranade, 1994; Verma, 1997). Especially the course of the day should be guided by a routine. One should sleep regularly and not too little or too much (Ranade, 1994) and rise early in the morning (Prabhupada, 1987e). Late night hours are governed by *tamas* and should be used to sleep, whereas the morning hours are *sattvic* and should be utilized for spiritual development (Wolf, 2008). Verma (1997) also recommends rituals for new beginnings in life.

2.6 Conclusion

In summary, according to the *tri-guna* model, well-being is influenced by three energies called *sattva*, *rajas* and *tamas*. Illness and psychological disturbances result from an excess of *rajas* and *tamas*, whereas a strong *sattva* leads to well-being. When *sattva* is strong a person is calm, relaxed and has a high stress-tolerance. He or she often experiences positive

emotions, is enthusiastic and disciplined. People with strong *sattva* have a well-meaning attitude toward others and perform their duties reliably. They have a healthy life-style and are satisfied with their life. People with an excess of *rajas* have a low stress-tolerance and worry a lot. They are often frustrated, restless and have strong desires for prestige and wealth. Their life-style is unhealthy and they do not consider moderating the use of their energy. They have difficulties relaxing and take pleasure in actions which bring short-term relief but are harmful in the long-term. People with an overly strong *tamas* focus on the negative and do not try to solve their problems. They mostly experience negative emotions and have difficulty finding motivation for constructive activity. They are undisciplined, lack in energy and are insensitive towards others. *Tamasic* people neglect their health the most, and are dissatisfied with their lives.

The *tri-guna* model also provides for ways to make life more positive and enjoyable, by making *sattva* the dominant *guna*. In short, activities which increase *sattva* and decrease *rajas* and *tamas* are meditation, reflecting on the difference between matter and spirit, restraining the activity of senses, mind and speech, developing certain virtues such as honesty and patience, as well as a well-meaning attitude and behavior toward others. Furthermore, it is helpful to take care of balancing activity and inactivity in one's style when working and resting, and to implement routines during the course of the day.

As this literature review shows, the *tri-guna* model has been elaborated on extensively in different ancient Indian scriptures. The context in which *tri-guna* has been developed has, of course, implications on its postulated effects, some of which might sound quite strange and outdated to contemporary readers. However, if one abstracts from such context specific pecularities, the model encompasses details for diagnosing the dominating *guna(s)*, and statements on how to intervene so that well-being can be enhanced. As already hinted at above, many of the concepts and relationships described in the chapter might carry with them contextual properties (stemming from ancient India) that might not be necessary for yielding the results suggested in the scriptural sources analyzed here. However, the questions of whether the suggested effects (and maybe others) can be produced in a systematic way, and which parts of the proposed interventions really work, can and should be examined in a rigorous scientific way. This paper forms the theoretical basis for investigating these postulations empirically.

2.7 Appendices

2.7.1 References

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3. Tri-Guna Skalen (TGS): Entwicklung und psychometrische Eigenschaften

3.1 Zusammenfassung

Die Tri-Guna Skalen (TGS) erheben drei Komponenten eines altindischen Modells über Wohlbefinden – die drei Gunas: Sattva, Rajas und Tamas. Im Folgenden wird zunächst das Modell, auf dem die Skalen beruhen, näher beschrieben. Die bisher zu seiner Messung entwickelten Fragebögen weisen einige, teilweise erhebliche, Defizite auf, die durch die hier vorgestellte Neuentwicklung behoben werden sollen. Die psychometrischen Eigenschaften der neuen Skalen wurden in zwei Studien (N = 337 und 455) untersucht und verbessert. Durch exploratorische Faktorenanalysen konnte eine eindeutige Faktorstruktur der Skalen hergestellt werden. Itemanalytische, Reliabilitäts- und Validitätswerte sind zufriedenstellend. Theoriekonsistent korrelieren hohe Werte auf den Sattva-Skalen mit einem besseren psychischen und körperlichem subjektivem Wohlbefinden und einem geringeren Ausmaß an Stresserleben.

3.2 Einleitung

In den letzten Jahrzehnten hat sich der Fokus der Forschung zur psychischen Gesundheit immer mehr ausgeweitet, um nicht nur zu untersuchen, was Menschen krank macht, sondern auch zu erforschen, was Menschen gesund macht und hält. Aus der westlichen akademischen Forschung sind einige Modelle und Interventionsansätze in Hinblick auf die Entstehung und Steigerung des Wohlbefindens hervorgegangen (Cloninger, 2006; Diener & Ryan, 2009; Fava & Ruini, 2009; Fordyce, 1977; Frisch, 2009; Gallagher, Lopez & Preacher, 2009; Kaluza, 2011; Ryff & Singer, 2008; Ryff, 2014; Seligman, Rashid & Parks, 2006).

Auch außerhalb der westlichen akademischen Forschung gibt es interessante Ansätze zur Förderung der psychischen Gesundheit. Einige dieser Ansätze gewinnen in der „Mainstream-Forschung“ immer mehr Relevanz, wie z.B. die Achtsamkeitsmeditation (Eberth & Sedlmeier, 2012). Ein noch wenig bekannter, aber relevanter Ansatz, ist das Modell der drei Gunas aus der altindischen Sankhya-Philosophie. Ergebnisse aus verschiedenen Studien dazu liefern zum großen Teil Belege für die Gültigkeit des Guna-Modelles, auch wenn sich einige widersprechen (Puta & Sedlmeier, 2014). Insgesamt ist es schwierig die vorhandenen Studien zu vergleichen, da eine Reihe unterschiedlicher Guna-Inventare vorliegen und verwendet wurden, welche jeweils andere Aspekte des Guna-Modelles erfassen. Wie auch Murthy und Kumar (2007) festhalten, führt das zu Schwierigkeiten bei der Konstruktvalidierung.

Die weitere Erforschung des Modells bedarf einer objektiven, reliablen und validen Diagnostik der Gunas. Die bisherigen Diagnoseinstrumente weisen gravierende Probleme auf: die Validität ist aufgrund einseitiger Betrachtungen und fehlender oder bruchteilhafter Definitionen des Konstruktes nicht gegeben. Hinzu kommt, dass die methodische Vorgehensweise bei der Konstruktion der Fragebögen meist unklar bleibt oder erhebliche Mängel aufweist, wie v.a. die weitestgehend fehlende faktorenanalytische Untersuchung der Fragebogenitems. Die von uns entwickelten Tri-Guna Skalen (TGS) vermeiden diese Probleme, da sie auf einer umfassenden Konstruktdefinition beruhen und die Vorgehensweise bei der Konstruktion der Skalen den üblichen Anforderungen an Gütekriterien bei Fragebögen gerecht wird. Ziel dieses Artikels ist darzustellen, wie die TGS entwickelt wurden und welche psychometrischen Eigenschaften sie aufweisen. Dazu wird zuerst das Modell der drei Gunas vorgestellt. Danach führen wir die Fragebögen auf, die zur Erfassung der Gunas bereits erarbeitet wurden und gehen auf deren Mängel ein. Daraufhin stellen wir vor, wie die TGS entwickelt wurden und was die empirische Untersuchung der Skalen gezeigt hat.

3.3 Das Modell der drei Gunas

Im folgenden Abschnitt stellen wir das Modell der drei Gunas kurz vor. Dem Modell der drei Gunas zufolge wird die Psyche von drei Energien beeinflusst – Sattva-Guna, Raja-Guna und Tama-Guna, welche inter- und intraindividuell in unterschiedlicher Stärke wirken. Das Vorherrschen einer bestimmter Guna in der Psyche beeinflusst das Erleben und Verhalten des Menschen. Obwohl alle drei unentbehrliche Funktionen erfüllen, ist die Gesundheit am höchsten, wenn Sattva-Guna dominiert. Ein Vorherrschen von Raja- oder Tama-Guna führt zu psychischen Störungen.

Das Vorherrschen der jeweiligen Gunas zeigt sich in verschiedenen Verhaltensaspekten. Traditionelle, altindische Texte über das Guna-Modell beschäftigen sich vor allem mit der Auflistung der Indikatoren für die Gunas. Um ein Arbeitsmodell zu formulieren haben Puta und Sedlmeier (2014) diese Auflistungen der Indikatoren für die Gunas aus jeglichen zugänglichen, englisch- oder deutschsprachigen altindischen Texten über die Gunas (z.B. Ganganatha 1896, Theodor 2010) zusammengetragen. Zum Teil wurden Indikatoren von verschiedenen Texten unterschiedlichen Gunas zugeteilt (wie z.B. Kreativität von einem Autor als Zeichen für Sattva, von einem anderen für Rajas gewertet wurde), oder zwei Gunas zugleich (wie z.B. Zorn von einem Autor sowohl Rajas, als auch Tamas zugeteilt wurde). In solchen Fällen wurden beide Angaben in das Modell übernommen. Solche Indikatoren könnten einerseits auf Mischzustände der Gunas zurückzuführen sein, andererseits darauf, dass der Indikator nicht zutrifft. An dieser Stelle wird der Arbeitsmodellcharakter deutlich –

es sind weitere Studien nötig, welche untersuchen inwieweit solch mehrfach zugeteilte Indikatoren mit den restlichen Indikatoren der jeweiligen Guna zusammenhängen. Bei der Entwicklung der Itempools für die TGS wurden diese Indikatoren nicht berücksichtigt.

Um Überblick zu behalten über die große Anzahl der Indikatoren, welche pro Guna angegeben werden, wurden sie anhand der Kategorien der Verhaltensgleichung von Westhoff (2005) sortiert. Die Verhaltensgleichung wurde ursprünglich dazu entwickelt für die berufsbezogene Eignungsbeurteilung Arbeitsanforderungen zu ordnen, ist aber auch außerhalb dieses Kontexts ein nützliches Werkzeug um Faktoren zu gruppieren, die zur Vorhersage, Erklärung und Änderung von individuellem Verhalten wichtig sind. Die Gleichung sagt aus, dass Verhalten eine Funktion von sechs Faktoren und deren Wechselwirkungen (*I* steht für Interaktion) ist: *V = fI(kognitive, emotionale, motivationale und soziale Variablen, Variablen des Organismus und der Umgebung)*. Das Arbeitsmodell ist in Tabelle 1 zusammengefasst (siehe Puta & Sedlmeier, 2014, für die vollständige Aufführung).

Tabelle 1 Merkmale der Gunas in den Kategorien der Verhaltensgleichung

	Sattva	**Rajas**	**Tamas**
kognitive Merkmale	aufnahmefähig, gute Merkfähigkeit, intelligent, weise, Wahrnehmung der spirituellen Verbundenheit aller Lebewesen, Wissen über die Seele, hohe Selbstwirksamkeits-überzeugung, frei von Sorgen und Zweifeln, differenziert im Denken, wenig verzerrte Wahrnehmung der Realität, reflektiert, in jeder Situation das Gute sehen zu können, Liberalität, Vertrauen, vorausschauend, strukturiert, frei vom „falschen“ Ego, Bewusstseinsfokus auf innere Dinge	inkonsistentes „Wissen“, schwankendes Gedächtnis, zu denken der materielle Körper sei das Selbst, Sorgen, Zweifel, Dinge nicht so sehen können, wie sie sind, Wahrnehmung der Wahrheit wird durch starke persönliche Interessen verzerrt, Gedanken rasen, Nervosität, Zerstreutheit, Abgelenktheit, Bewusstseinsfokus auf externe Dinge	Stumpfsinn, Vergesslichkeit, Nichtwissen, unfundiertes Wissen, Undifferenziertheit, mentale Faulheit, Dinge nicht so sehen können, wie sie sind, Negativität, Unaufmerksamkeit, Bewusstseinsfokus auf externe Dinge
emotionale Merkmale	häufig positive Emotionen, emotionale Ausgeglichenheit, überdauernde Glückserfahrung, die auf der inneren Verbindung zum Atman beruht	häufig negative Emotionen (ungeduldig, frustriert), emotionale Unausgeglichenheit, Glückserfahrung, die auf sofortiger Befriedigung beruht und später zu Leid führt	häufig negative Emotionen (depressiv, hoffnungslos), Glückserfahrung, die auf Nachlässigkeit und Faulheit beruht
motivationale Merkmale	Ausdauer, Motivation den Notwendigkeiten des Lebens gerecht zu werden, ohne materiellen Nutzen zu erwarten, selbst-beherrscht, starker Wille, motiviert schädliche, aber kurzfristig	motiviert Lust zu befriedigen, Streben nach Reichtum, Macht und Prestige, weltliche Motive, materielle Wünsche, unaufhörliches Verlangen, Unstetigkeit, leidenschaftlich, exzessives Bemühen, innere	unrealistische Wünsche, Abneigung gegenüber konstruktiven Tätigkeiten, zweifelhafte Ziele, undiszipliniert, Wahl des Weges mit dem geringsten Widerstand, geringe

	angenehme Verhaltensweisen zu vermeiden, zu spirituellen Erfahrungen motiviert, wenig Ambition für Materialismus, Enthusiasmus, der kurzfristige Misserfolge (& Erfolge) überdauert	Getriebenheit aktiv zu sein, motiviert durch Erfolge, demotiviert durch Misserfolge	Willenskraft, unbedacht auf zukünftige Konsequenzen, lethargisch, das Handeln vernachlässigend, Prokrastination, unausdauernd, spirituell desinteressiert
soziale Merkmale	selbstbewusst, demütig, nicht egoistisch oder selbstabsorbiert, Interesse für andere, anderen gegenüber wohlgesonnen, großherzig, verträglich, ehrlich, wertschätzend, tolerant, Geben um des Gebens willen	manipulativ, egoistisch, verstecktes Eigeninteresse, andere beeindrucken wollen	zänkisch, boshaft, unsensibel, Blindheit für eigene Fehler
Merkmale des Organismus	vital, gesund, balanciert, der Körper fühlt sich leicht an, erholsamer Schlaf	Überreiztheit, Unausgeglichenheit, Schlafstörungen	wenig Energie, Körper fühlt sich schwer an, kein erholsamer Schlaf
Merkmale der Umgebung	Umgebung: hell, Natur Eigentum: Lebensstil beansprucht wenig natürliche Ressourcen	Umgebung: städtisch Eigentum: starke Beanspruchung natürlicher Ressourcen	Umgebung: Casinos, Bars Eigentum: Armut

Zusammengefasst: Personen mit ausgeprägter Sattva-Guna haben eine hohe Stresstoleranz, erleben häufig positive Emotionen und sind zufrieden mit ihrem Leben. Es fällt ihnen leicht ihre Ziele gegenüber konkurrierenden Motivationstendenzen abzuschirmen und sie sind ausdauernd. Desweiteren verhalten sie sich anderen gegenüber wohlwollend, sind zuverlässig, spirituell interessiert und leben gesundheitsbewusst. Personen mit vorherrschender Raja-Guna fühlen sich häufig gestresst. Ihre Gedanken rotieren um Sorgen, sie fühlen sich häufig unruhig und unzufrieden. Sie streben nach Geld und Ansehen und sind zwischenmenschlich hauptsächlich auf ihren eigenen Vorteil bedacht. Personen mit vorherrschender Tama-Guna fehlt es an Enthusiasmus und Energie. Sie sind pessimistisch und schieben Aufgaben und Probleme vor sich her. Häufig erleben sie negative Emotionen und sind unzufrieden mit ihrem Leben.

Einige empirische Studien haben Zusammenhänge zwischen den Gunas und verschiedenen Variablen untersucht (siehe Puta & Sedlmeier, 2014, für einen Überblick). Aufgrund der Probleme der vorhandenen Messinstrumente für die Gunas, auf die im nächsten Abschnitt detailliert eingegangen wird, ist die Aussagekraft dieser Studien allerdings begrenzt. Trotzdem möchten wir sie vorsichtig berücksichtigen. Sattva korrelierte unter anderem positiv mit persönlicher Effektivität (Kaur & Sinha, 1992), emotionaler Intelligenz (Khemka, Ramarao & Hankey, 2011), einem positiven Selbstbild (Sharma, 1999), Gewissenhaftigkeit, Verträglichkeit, Offenheit für Erfahrungen (Hopkins, 2003), einer idealistischen ethischen Orientierung (Bhal & Debnath, 2006) und negativ mit

Aufmerksamkeitsproblemen, aggressivem Verhalten (Archana Das & Venu Gopal, 2009), beruflichem Stress (Daftuar & Anjuli, 1997), Minderwertigkeitsgefühlen, phobischer Angst (Stempel, Cheston, Greer & Gillespie, 2006) und Neurotizismus (Hopkins, 2003; Sitamma, 2005).

Rajas und Tamas korrelierten unter anderem positiv mit Aufmerksamkeitsproblemen (Archana Das & Venu Gopal, 2009), Neurotizismus (Hopkins, 2003), Angst und psychischem Leiden allgemein (Stempel et al., 2006) und negativ mit Verträglichkeit, Gewissenhaftigkeit und Offenheit für Erfahrungen (Hopkins, 2003). Rajas korrelierte außerdem negativ mit Arbeitszufriedenheit (Sharma, 1999). Tamas korrelierte positiv mit Psychotizismus, phobischer Angst, Depression und Minderwertigkeitsgefühlen (Stempel et al., 2006), beruflichem Stress (Daftuar & Anjuli, 1997) und aggressivem Verhalten (Archana Das & Venu Gopal, 2009).

Ganz einheitlich sind die Ergebnisse nicht: zum Beispiel korrelierte nur Rajas negativ mit Arbeitszufriedenheit in Sharmas Studie (1999), nicht Tamas, und obwohl es zu erwarten wäre, zeigte sich auch keine positive Korrelation zwischen Sattva und Arbeitszufriedenheit. Widersprüchliche Ergebisse liegen vor in Bezug auf die Beziehung zwischen den drei Gunas und Spiritualität (Bhal & Debnath, 2006; Underwood & Teresi, 2002), Sattva und Rajas und Extraversion (Hopkins, 2003; Sitamma, 2005) und Sattva und Rajas und Stress (Daftuar & Anjuli, 1997; Hopkins, 2003). Es bleibt unklar, ob die widersprüchlichen Ergebnisse am Konstrukt oder an den verwendeten Fragebögen liegen. Im folgenden Abschnitt werden die vorhandenen Fragebögen genauer dargestellt und es wird aufgezeigt, weshalb ein neues Instrument für die weitere Forschung unbedingt nötig ist.

3.4 Probleme bisheriger Fragebögen zur Erfassung der drei Gunas

Einerseits wurden schon zahlreiche Fragebögen zur Erfassung der Gunas entwickelt, andererseits ist jeder von ihnen in Bezug auf die psychometrischen Eigenschaften mit erheblichen Mängeln oder Unklarheiten behaftet. Ein Instrument zur Erfassung der Gunas sollte auf einem umfassendem theoretischen Modell basieren, den Testgütekriterien gerecht werden, was auch heißt, dass die Fragebogenstruktur faktorenanalytisch geprüft sein sollte; und es sollte auch in der westlichen Kultur einsetzbar sein. Derzeit erfüllt kein bestehendes Instrument all diese Forderungen. Im Folgenden werden diese Probleme dargestellt. Tabelle 2 liefert einen Überblick über die vorhandenen Fragebögen, wie sie konstruiert und empirisch untersucht wurden und warum wir sie als ungeeignet betrachten.

Tabelle 2 Bisherige Fragebögen zur Erfassung der Tri-Gunas

	Allgemeines	Psychometrische Eigenschaften	Probleme
Singh (1971)	– Grundlage: *Mahabharata* – als Interviewleitfaden gedacht – Itembeispiel: „28. Bedauerst du oft, dass du Freunden, die leiden, nicht helfen kannst?“	– Eine „vergleichende“ Studie wird erwähnt, die andeute, dass solch ein Inventar für die Guna-Diagnostik nützlich wäre. Intensive Forschung sei allerdings noch nötig.	– keine Angaben zur Herkunft des theoretischen Modells – Items wurden von einem Dialog aus dem Mahabharata abgeleitet, nicht von dem theoretischen Modell. – zeitlich aufwendig (Interview) – Ein möglicher standardisierter Umgang mit den Fragen wird angedeutet, müsste aber vom Anwender noch erarbeitet werden. – nicht im westlichen Kulturkreis anwendbar – Fragebogen scheint insgesamt eher als Anregung für weitere Forschung gedacht zu sein.
Singh (1972, zit. n. Sitamma, 2005)	– Ratingskala	– Skalenreliabilitäten: $r = .79$ bis .98 – an Studenten und Erwachsenen standardisiert	– unzugänglich
Uma, Lakshmi & Parameshwaran, 1971 (zit. n. Sitamma, 2005)	– Grundlage: *Bhagavad-gita* und *Sankhya Karika* – 120 Items, forced-choice	– Skalenreliabilitäten: Sattva: $r = .61$ & .88; Rajas: $r = .65$ & .77; Tamas: $r = .6$ & .69 (zit. n. Sitamma, 2005) – Skaleninterkorrelationen: Sattva & Rajas: n.s.; Sattva & Tamas: n.s.; Rajas & Tamas: $r = .56$ ($p < .01$) (Krishna Rao & Harigopal, 1979)	– unzugänglich
Laxmibai, Murthy & Nagalakshmi (1975, zit. n. Sitamma, 2005)	– Grundlage: *Bhagavad-gita* – 116 Items, Ratingskala		– unzugänglich
Mohan & Sandhu (1986)	– Grundlage: *Bhagavad-gita* – 40 Items, forced-choice – Konstruktion: ursprüngliche Itempool wurde von acht Experten analysiert, umstrittene Items wurden aussortiert, Fragebogeneinsatz ($N = 111$), Skalenanalyse	– Skaleninterkorrelationen: Männer ($N = 54$): Sattva & Rajas: $r = -.74$ ($p < .01$); Sattva & Tamas: $r = -.62$ ($p < .05$); Rajas & Tamas: $r = -.02$ (n.s.) Frauen ($N = 57$): Sattva & Rajas: $r = -.79$ ($p < .01$); Sattva & Tamas: $r = -.79$ ($p < .01$);	– bruchteilhafte Literaturrecherche – Konstruktdefinition unzureichend – Herkunft der Items unklar – unklare Faktorenstruktur – Itemanalyse fehlt

		Rajas & Tamas: $r = .32$ ($p < .05$)	– Testgütekriterien nicht untersucht – Items unzugänglich
Das (1991)	– Grundlage: *Bhagavad-gita* – zehn Items, forced-choice – Konstruktion: Pilotstudie mit erster Fragebogenversion ($N = 38$), daraufhin Überarbeitung der Items, erneuter zweimaliger Fragebogeneinsatz ($N = 400$ und $N = 75$), Skalenanalyse, Analyse der Reliabilität, Normierung – Itembeispiel: „H. a) Ich verspüre keinen Antrieb zu handeln. b) Ich handle, so wie es der Verstand verlangt. c) Ich handle impulsiv.“	– Kriteriumsvalidität ($N = 400$; Korrelation Selbstbeurteilung Fragebogen mit Selbstbeurteilung in Bezug auf verschiedene Aktivitäten, die den Gunas zugeordnet wurden): $r = .32$ ($p < .01$) – Retest-Reliabilität ($N = 75$): $r = .6$ ($p < .01$) – Normierung: 400 Vpn, 18-70 Jahre	– bruchteilhafte Literaturrecherche – Konstruktdefinition unzureichend – Herkunft der Items unklar – unklare Faktorenstruktur – Item- und Skalenanalyse fehlt – nicht im westlichen Kulturkreis anwendbar
Kaur & Sinha (1992)	– Grundlage: *Bhagavad-gita* & Chakraborty (1985, zit. n. Kaur & Sinha, 1992) – 12 Items, Ratingskala – Konstruktion: ein größerer Itempool wurde in einer Pilotstudie eingesetzt, daraufhin wurden 37 Items ausgewählt (Kriterien nicht genannt). In einer exploratorischen Faktorenanalyse wurden diese 37 Items auf 12 Items reduziert (nach FA-Kriterien, siehe Kaur & Sinha, 1992), Analyse der Skalenreliabilitäten – Itembeispiel: „Beurteilen Sie zu welchem Ausmaß Sie die folgenden Eigenschaften besitzen: 1. Traurigkeit 2. Vergesslichkeit ...“	– Eine exploratorische Faktorenanalyse über 37 Items zeigte neun Faktoren an. Davon wurden 12 Items behalten, die auf vier Faktoren luden, welche die Autoren Sattva, Rajas positiv, Rajas negativ, und Tamas nannten. – Skalenreliabilitäten (Cronbachs α): Sattva: $\alpha = .83$; Rajas positiv: $\alpha = .78$; Rajas negativ: $\alpha = .73$; Tamas: $\alpha = .71$	– bruchteilhafte Literaturrecherche – Konstruktdefinition unzureichend – Rajas-Items bilden zwei Faktoren – Item- und Skalenanalyse fehlt
Pathak, Bhatt & Sharma (1992)	– 88 Items (Kurzversion: 40 Items, Sharma, 1999), Hindi & Englisch, Ratingskala – Konstruktion: Itempool aus „Literatur“ erstellt, dann von Experten aussortiert. Fragebogeneinsatz (N nicht angegeben), Item- und Skalenanalyse – Itembeispiel: „Ich helfe nur Personen, die mir schon mal geholfen haben.“	– Skaleninterkorrelationen: Sattva & Rajas: $r = -.35$; Sattva & Tamas: $r = -.24$; Rajas & Tamas: $r = .27$ (keine Angaben zur Signifikanz) – Kriteriumsvalidität (Korr. Selbstrating mit Fremdrating): Sattva: $r = .51$; Rajas: $r = .41$; Tamas: $r = .54$ (keine Angaben zur Signifikanz) – Skalenreliabilitäten (Re-test): Sattva: $r = .62$; Rajas: $r = .83$; Tamas: $r = .7$ – Normen vorhanden	– Literaturquellen unklar – Konstruktdefinition unzureichend – unklare Faktorenstruktur – Itemanalyse fehlt – keine Angaben zur Normierungsstichprobe – nicht alle Items sind im westlichen Kulturkreis anwendbar

Mathew (1995)	– 35 Items, forced-choice – Itembeispiel: „32. Gewissen I. Schwaches Über-Ich, nicht an richtig und falsch interessiert A. Starkes Gewissen und Schuldgefühle, rigider Moralcodex S. Moralsinn gründet auf Liebe, innere Kontrolle und Integration“	– Split-half Reliabilitäten: Sattva: $r = .86$; Rajas: $r = .89$; Tamas: $r = .73$ (Vinodkumar, 1995, zit. n. Mathew, 1995) – provisorische Normen angegeben	– Literaturquellen unklar – Fragebogenkonstruktion unklar – unklare Faktorenstruktur – Item- und Skalenanalyse fehlt – Items für Nicht-Psychologen teilweise schwer nachvollziehbar
Frawley (1997)	– 30 Items, forced-choice – Itembeispiel: „Wut: Selten / Manchmal / Oft“		– Literaturquellen unklar – Fragebogenkonstruktion unklar – Gunas werden als eine Dimension gemessen (mit Rajas als Mitte) – psychometrische Eigenschaften wurden nicht untersucht
Kapur, Uma, Reddy, Barnabas & Singhal (1997)	– 17 Items, Ratingskala – Zielstichprobe: Kinder – Itembeispiel: „Vertrauenswürdig: Meistens / Etwas / Gar nicht“		– Literaturquellen unklar – Konstruktdefinition fehlt – Fragebogenkonstruktion unklar – Gunas werden als eine Dimension gemessen (mit Rajas als Mitte) – psychometrische Eigenschaften unklar
Marutham, Balodhi & Mishra (1998)	– Grundlage: *Sankhya Karika* und *Bhagavad-gita* – 120 Items, Ratingskala – Konstruktion: Überprüfung des Itempools durch Experten, Fragebogeneinsatz ($N = 322$, Studenten), Itemanalyse	– Itemspezifische Homogenitäten (Korrelation Item mit Gesamtskala): Sattva: von $r = -.24$ bis $r = .44$; Rajas: von $r = -.01$ bis $r = .38$; Tamas: von $r = .01$ bis $r = .48$ (keine Angaben zur Signifikanz) – Skaleninterkorrelationen: Sattva & Rajas: $r = .68$; Sattva & Tamas: $r = .58$; Rajas & Tamas: $r = .56$	– bruchteilhafte Literaturrecherche – Konstruktdefinition unzureichend – Testgütekriterien wurden nicht untersucht – unklare Faktorenstruktur – Items unzugänglich
Wolf (1998)	– Grundlage: *Bhagavad-gita* – 80 Items, Ratingskala – Konstruktion: – Überprüfung des Itempools durch Experten, Fragebogeneinsatz ($N = 247$), Faktorenanalyse, Itemanalyse – Itembeispiel: „Ich bin fast immer enthusiastisch.“	– Reliabilität: $\alpha \geq .86$ (Cronbachs α, Wolf, 1998); $\alpha \geq .73$ (Cronbachs α, Stempel, Cheston, Greer & Gillespie, 2006) – Skaleninterkorrelationen: Sattva & Rajas: $r = -.51$; Sattva & Tamas: $r = -.72$; Rajas & Tamas: $r = .43$ – Konstruktvalidität: Korrelationen Gunas und verbale Aggressivität: Sattva: $r = -.59$; Rajas: $r = .76$, Tamas: $r = .42$; Korrelationen Gunas und Lebenszufriedenheit: Sattva: $r = .64$; Rajas: $r = -.47$, Tamas: $r = -.61$;	– bruchteilhafte Literaturrecherche – Konstruktdefinition unzureichend – Rajas und Tamas Faktoren sind nicht eindeutig

		Korrelation Schlafquantität & Tamas: $r = .37$; Korrelation Sattva & tägliche spirituelle Erfahrungen (Stempel et al., 2006): $r = .41$ ($p < .01$); Korrelationen Gunas & psychische Belastung (Stempel et al., 2006): Sattva: $r = -.25$ (n.s.); Rajas: $r = .33$ ($p < .05$), Tamas: $r = .51$ ($p < .01$) – Die konfirmatorische Faktorenanalyse mit multiplen Gruppen ergab, dass viele der Rajas Items auch auf dem Tamas Faktor luden und viele der Tamas Items auch auf dem Rajas Faktor. Wolf (1998) stellt die Fähigkeit des Fragebogens zwischen diesen beiden Gunas zu differenzieren in Frage.	
Tripathi & Pandey (2002)	– 133 Items, Ratingskala – Zielstichprobe: Krebspatienten		– Literaturquellen unklar – Konstruktdefinition unzureichend – Fragebogenkonstruktion unklar – psychometrische Eigenschaften wurden nicht untersucht – Items unzugänglich
Elankumaran (2004)	– Grundlage: *Bhagavad-gita* – 14 Items, forced-choice – Konstruktion: Überprüfung des Itempools durch Experten, Fragebogeneinsatz ($N = 282$) – Itembeispiel: „12. a) Der Schlüssel zum Erfolg ist Wissen. b) Der Schlüssel zum Erfolg ist praktisches Training und harte Arbeit. c) Erfolg ist eine Frage des Glücks.“	– Konstruktvalidität: Personen mit dominantem Sattva & Rajas hatten ein signifikant höheres Arbeitsengagement, als Personen mit dominantem Tamas.	– bruchteilhafte Literaturrecherche – Konstruktdefinition unzureichend – unklare Faktorenstruktur – Item- und Skalenanalyse fehlt – keine Angaben zur Reliabilität
Kejirwal & Krishnan (2004)	– Grundlage: *Bhagavad-gita* – 46 Items, Ratingskala, Items zur Fremdbeurteilung	– Reliabilität: $\alpha \geq .9$ (Cronbachs α)	– bruchteilhafte Literaturrecherche – Fragebogenkonstruktion unklar – Faktorenstruktur unklar – Item- und Skalenanalyse fehlt – keine Untersuchung der Validität – nicht alle Items sind im westlichen Kulturkreis anwendbar
Bhal & Debnath (2006)	– Grundlage: *Bhagavad-gita* – 13 Items, Ratingskala	– expl. FA ($N = 108$): Items luden auf drei Faktoren, welche den Gunas entsprechen	– bruchteilhafte Literaturrecherche – Inhaltsvalidität eingeschränkt

	– Fragebogenkonstruktion:
	  – Überprüfung des Itempools durch Experten,
	  – exploratorische Faktorenanalyse (N = 108), Itemreduktion, Itemanalyse
	  – zwei weitere exploratorische Faktorenanalysen (N = 120 & N = 153) bestätigen Faktorenstruktur, Itemreduktion, Itemanalyse
	  – Itembeispiel: „Mir fehlt es oft an Motivation und Antrieb.“
		– konfirmatorische Faktorenanalyse (N = 114) ergab gute Fit-Maße für das Drei-Faktoren-Modell (χ^2 = 70.829; df = 65; p = .290; CFI = .978, RMSEA = .028)
		– Reliabilität (Cronbachs α, N = 108): $\alpha \geq .64$
		– Skaleninterkorrelationen (N = 108): Sattva & Rajas: r = -.13 (n.s.); Sattva & Tamas: r = -.19 (p < .05); Rajas & Tamas: r = .08 (n.s.)
			– Itemanalyse fehlt

Shilpa & Murthy (2012)	– Grundlage: umfangreiche Literaturrecherche – 189 Items, forced-choice – Normen vorhanden (N = 1548)	– Reliabilität: Cronbachs α (N = 1548): $\alpha \geq .88$; Re-test (N = 60): $r \geq .73$ (p < .01) – konvergente Validität (N = 60): Korrelationen mit Guna-Subskalen von Sharma (1999) Tamas: r = .43; p < .01; Rajas: r = .84; p < .01; Sattva: r = .78; p < .01 – Validität: Expertenurteile: 100% der befragten Ayurvedaexperten und 90% der Psychologen fanden, dass die Items valide sind.	– Konstruktdefinition unzureichend – unklare Faktorenstruktur – Item- und Skalenanalyse fehlt – Items unzugänglich

Alle Angaben sind aus den Artikeln der Autoren, soweit nicht anders angegeben.

Das grundlegendste Problem der vorliegenden Fragebögen ist, dass deren Autoren das zu messende Konstrukt – die Gunas – gar nicht oder unzureichend genau definieren und dargestellen. In den Studien werden keine oder wenig Informationen über das Modell vorgestellt – meist folgt nur ein Verweis auf die Schrift, aus der relevante Informationen entnommen wurden. Demzufolge ist es schwierig nachzuvollziehen, auf welcher theoretischen Grundlage die Fragebögen entwickelt wurden. Es herrscht Uneinigkeit darüber, was die Gunas sind, wie sie zueinander in Beziehung stehen und wie sie wirken. Die Unterschiede zwischen den daraus resultierenden Fragebögen sind groß.

Desweiteren basieren die meisten Fragebögen nur auf einer bruchteilhaften Literaturrecherche und decken somit nur einzelne Aspekte des Modelles ab. Die Gunas werden in zahlreichen Schriftquellen der indischen Psychologie beschrieben, die meisten Fragebögen beruhen jedoch einzig auf den Aussagen der *Bhagavad-gita*[2] (z.B. Das, 1991; Elankumaran 2004; Mohan & Sandhu, 1986). Die einzigen Autoren, die bei der Darstellung der Fragebogenkonstruktion eine umfassende Literaturrecherche erwähnen sind Shilpa & Murthy (2012). Bis auf die erwähnten doppelten Zuteilungen von Indikatoren zu mehreren Gunas, widersprechen sich die Texte nicht, sondern ergänzen einander und liefern insgesamt ein umfassenderes Guna-Modell, als einzeln. Das spricht dafür, dass es aussagekräftiger ist, bei der Erstellung eines Arbeitsmodells mehrere Texte zu berücksichtigen, statt einen oder ein paar wenige.

Auch strukturell unterscheiden sich die Modelle: zum Beispiel behandeln einige die Gunas als *eine* Dimension (z.B. Frawley, 1997; Kapur, Uma, Reddy, Barnabas & Singhal, 1997), wobei die Werte der Mitte und der zwei Pole der Dimension (jeweils unterschiedlich) als Sattva, Rajas und Tamas definiert sind (z.B. wird bei Frawley (1997) die Häufigkeit, zu der man Angst erfährt je einer Guna zugeordnet – *selten* entspräche Sattva, *manchmal* Rajas und *oft* Tamas). Andere Autoren betrachten die Gunas als drei getrennte, jedoch voneinander abhängige Dimensionen (z.B. Das, 1991; Pathak, Bhatt & Sharma, 1992 Wolf, 1998), was auch den Darstellungen der Sankhya Texte entspricht.

Ein weiteres gravierendes Problem bisheriger Fragebögen ist die – aus heutiger Sicht – unsaubere methodische Vorgehensweise bei der Konstruktion und Darstellung der Fragebögen. Was die Darstellung betrifft, so fehlen häufig relevante Angaben – z.B. fehlen selbst bei schwachen Korrelationen Angaben zur Signifikanz der item- oder skalenanalytischen Werte (Marutham, Balodhi & Mishra, 1998; Pathak et al., 1992) oder es ist nicht nachvollziehbar auf welcher Stichprobe die Normen entwickelt wurden (Mathew,

[2] eine der bekanntesten altindischen Schriften

1995; Pathak et al., 1992). Bei etlichen der Fragebögen bleibt die Vorgehensweise bei der Konstruktion des Fragebogens gänzlich unklar, z.T. weil die psychometrischen Eigenschaften gar nicht untersucht wurden (Frawley, 1997; Tripathi & Pandey, 2002) oder die relevante Arbeit dazu selbst nach intensiven Bemühungen unsererseits nicht zugänglich war oder nicht veröffentlicht wurde (Kapur et al., 1997; Laxmibai, Murthy & Nagalakshmi, 1975, zit. n. Sitamma, 2005; Singh, 1972, zit. n. Sitamma, 2005; Uma, Lakshmi & Parameshwaran, 1971, zit. n. Sitamma, 2005). Der größte Mangel in Bezug auf die Konstruktion der Fragebögen ist, dass meistens ohne faktorenanalytische Verfahren gearbeitet wurde und die Faktorenstruktur der Items unklar bleibt. Nur Bhal & Debnath (2006) und Wolf (1998) untersuchten die Items ihres Fragebogens faktorenanalytisch und nur Bhal & Debnath (2006) unterzogen ihren Fragebogen daraufhin einer Revision und erreichten aus der Sicht der faktoriellen Validität ein zufriedenstellendes Ergebnis. Das Forced-choice-Item-Format einiger Fragebögen schließt die Möglichkeit eine Faktorenanalyse durchzuführen sogar aus (Das, 1991; Elankumaran, 2004; Frawley, 1997; Mathew, 1995; Mohan & Sandhu, 1986; Shilpa & Murthy, 2012; Uma, Lakshmi & Parameshwaran, 1971, zit. n. Sitamma, 2005). Desweiteren sind die Items der Fragebögen z.T. sehr kulturspezifisch und wären im westlichen Kulturkreis nicht aussagekräftig (z.B. „I consider „Nishkam Karma“ (undesirous of fruit) as best way of performing an action.“, Pathak et al., 1992).

Insgesamt ist keiner der vorliegenden Fragebögen als aussagekräftiges Diagnoseinstrument für die Gunas geeignet. Jeder vorhandene Fragebogen weist mindestens ein schwerwiegendes Problem auf, das ihn untauglich macht. Die größte Validitätseinschränkung ist, dass, bis auf einen, alle Fragebögen auf einer ausschnitthaften (oder unklaren bis hin zu fehlenden) Konstruktdefinition basieren. Das führt dazu, dass die Fragebögen verschiedene Messgegenstände haben, obwohl sie alle auf den gleichen abzielen. Das äußert sich zum einen in den Auffassungen darüber, welche Verhaltensaspekte die Gunas beinhalten, zum anderen darin, in welcher Form die Gunas zusammenhängen, d.h. auf wie vielen Dimensionen sie gemessen werden sollten. Weitere gravierende Probleme sind die Unklarheiten und Mängel bei der Konstruktion der Fragebögen und der Untersuchung ihrer psychometrischen Eigenschaften. Auch die kulturelle Einbettung der Fragebögen in das Gedankensystems Indiens macht etliche Items untauglich zur Anwendung im westlichen Kulturkreis.

Die folgenden Studien wurden mit dem Ziel durchgeführt, ein geeignetes Instrument zur Messung der Gunas zu entwerfen. Der Fragebogen soll auf einer vollständigen Konstruktdefinition beruhen, den Anforderungen an Item- und Skalenanalytische Kennwerte und Testgütekriterien gerecht werden und auch für Menschen aus westlichen Ländern verständlich sein.

3.5 Studie 1

3.5.1 Ziele und Forschungsfragen

Ziel der ersten Studie war es, einen Pool möglicher Items zur Erfassung der Gunas auf geeignete Items für einen Fragebogen zu reduzieren. Der Fragebogen sollte obengenannte Kriterien erfüllen, d.h. auf einem ausreichend definiertem theoretischen Modell basieren, den Testgütekriterien entsprechen und auch in westlichen Kulturkreisen anwendbar sein. Folgende Forschungsfragen wurden in Studie 1 gestellt:

1) Welche Faktorenstruktur liegt dem Fragebogen zugrunde?

In Studie 1 sollte zunächst die Faktorenstruktur empirisch untersucht werden und festgestellt werden, welche Items die Struktur unterstützen und welche nicht (die dann aussortiert werden sollten). Es sollte auch untersucht werden, wie groß die Unterschiede zwischen den Haupt- und Fremdfaktorladungen der Items sind. Dabei ist der Sollwert ≥ .15 (Worthington & Whittaker, 2006).

2) Liegen die psychometrischen Merkmale der Items und Skalen innerhalb der definierten Grenzen?

Um die Qualität dieser ersten Fragebogenversion festzustellen und verbesserungswürdige Aspekte zu erkennen sollten auch die Schwierigkeit und Trennschärfe der Items untersucht werden, sowie die interne Konsistenz jeder Subskala (als Maß für die Reliabilität).

2a) Itemschwierigkeit

Die Itemschwierigkeit liefert einen Hinweis darauf, wie gut ein Item zwischen Personen mit unterschiedlicher Merkmalsausprägung differenziert. Sie gibt den relativen Anteil der Personen an, die ein Item im Sinne des zu messenden Merkmals beantworten und sollte im Bereich zwischen .2 und .8 liegen (Bortz & Döring, 2002). Sehr „schwierige“ Items werden von fast allen Probanden bejaht, während sehr „leichte“ Items von fast allen Probanden verneint werden. Solche Items trennen nicht zwischen Personen mit hoher und niedriger Merkmalsausprägung und sind deshalb wenig informativ.

2b) Trennschärfe

Die Trennschärfe ist nach Fisseni (2004) der wichtigste Itemkennwert und gibt an, wie gut das Gesamtergebnis der Skala durch das Item vorhergesagt wird und sollte mindestens einen Wert von .3 annehmen (Bortz & Döring, 2002).

2c) Interne Konsistenz

Die interne Konsistenz ist ein Maß für die Zuverlässigkeit eines Verfahrens. Die Untergrenze für die interne Konsistenz (Cronbachs α) bei gängigen Persönlichkeitsfragebögen liegt nach Schermelleh-Engel und Werner (2012) bei .7.

3.5.2 Fragebogenkonstruktion

Um einen Fragebogen zur Erhebung der drei Gunas zu entwickeln, wurde im ersten Schritt ein Arbeitsmodel für das Konstrukt erstellt (siehe Puta & Sedlmeier, 2014). Dazu wurden die Indikatoren der Gunas aus der Literatur der indischen Psychologie zusammengetragen und anhand der Struktur der Verhaltensgleichung von Westhoff (2005) sortiert.

Im zweiten Schritt wurde der erste Itempool generiert. Dazu wurden zunächst Items aus uns vorliegenden Guna-Inventaren zusammengetragen, welche im Rating-Skala-Antwortformat aus vollständigen Sätzen zur Selbstbeurteilung formuliert waren. Diese Kriterien erfüllten nur drei der vorhandenen Inventare: Bhal und Debnath (2006), Pathak et al. (1992) und Wolf (1998). Die Items dieser Inventare wurden darauf untersucht, ob sie als valide Indikatoren für das formulierte Arbeitsmodell (siehe Tabelle 1) gelten können und für Personen aus dem westlichen Kulturkreis geeignet sind – insgesamt erfüllten 49 Items diese Kriterien, die dann aus dem Englischen übersetzt und übernommen wurden. Diese Items wurden den Faktoren der Verhaltensgleichung zugeordnet, welche sie erfassen. Die ausgewählten Items waren nicht ausreichend, um das Konstrukt umfassend abzudecken. Aus diesem Grund wurden danach ausgehend vom Arbeitsmodell weitere Items generiert. Es wurde darauf geachtet, dass jeder eindeutiger Guna-Indikator (das heißt, der nur einer Guna zugeordnet wird) aus dem Arbeitsmodell, der sich durch eine Selbsteinschätzung im Item-Format erfassen lässt, durch mindestens ein Item repräsentiert war. Die Items wurden so formuliert, dass sie einfach zu verstehen und prägnant sind und im Ratingskalenformat beantwortet werden können. Der Itempool umfasste schließlich insgesamt 238 Items; 56 Items für kognitive Indikatoren, 44 Items für emotionale Indikatoren, 65 Items für motivationale Indikatoren, 39 Items für soziale Indikatoren, 28 Items für körperliche Indikatoren und Indikatoren des Gesundheitsverhaltens und sechs Items für Indikatoren der Umgebung. Die ungleiche Anzahl an Items pro Indikatorengruppe ergab sich aus der unterschiedlichen Anzahl an Guna-Indikatoren für die Kategorien der Verhaltensgleichung im Arbeitsmodell.

Als Antwortformat wurde eine fünfstufige Ratingskala gewählt. Nach Bühner (2011) können zu viele Antwortkategorien die psychometrischen Eigenschaften der Items beeinträchtigen, insbesondere, wenn die Studienteilnehmer/innen überfordert sind durch zu viele und schwer zu unterscheidende Abstufungen der Skala. Die verbale Verankerung wurde nach dem Vorschlag von Rohrmann (1978, zit. n. Bühner, 2011) ausgewählt: *trifft gar nicht zu*, *trifft wenig zu*, *trifft teils-teils zu*, *trifft ziemlich zu* und *trifft völlig zu*.

3.5.3 Stichprobe

Der erste Itempool wurde Mai – Juli 2012 an 337 Personen im Alter von 17 bis 77 (Ø 41.9 Jahre) untersucht. Davon waren der Großteil weiblich (79.8%). Die Personen wurden über Aushänge in Yoga Zentren in deutschen Großstädten, eine Annonce im Tagesspiegel (eine Berliner Zeitung), eine Facebook-Anzeige für Yoga-Interessierte und über den Newsletter der Veden Akademie kontaktiert. Diese „Yoga-Interessierte“ Population wurde bewusst gewählt, da der Fragebogen später in einer Guna-Interventionsstudie genutzt werden sollte, für die in Yoga Zentren Werbung gemacht werden sollte – die Stichproben sollten sich ähneln.

3.5.4 Vorgehensweise und Materialien

Die Aushänge und anderen oben genannten Informationswege, über welche die Studienteilnehmer/innen kontaktiert wurden, teilten den Teilnehmer/innen einen Link mit, der zu einer Online-Version der TGS führte, die mit der Software *Limesurvey* erstellt worden war. *Limesurvey* ist eine Umfragesoftware, welche die Antworten aller Studienteilnehmer/innen auf die Studien-Items online erfasste. Die Items wurden auf mehreren Seiten präsentiert und je nach Itemart wurde ein passendes Antwortformat eingestellt (zum Beispiel ein freies Feld für numerische Eingaben bei „Alter“ und eine fünf-stufige, verbal verankerte Ratingskala für die Items der TGS.) Auf der Startseite wurden die Teilnehmer/innen begrüßt, kurz über den Rahmen der Studie, die Dauer und Anonymität der Teilnahme informiert und zur Beantwortung der Items instruiert (siehe Anhang 3.8.4). Nach der Bearbeitung aller Items, erschien ein Schlussfenster, über welches die Teilnehmer/innen eine Dankesnachricht erhielten und über eine E-Mail Adresse benachrichtigt wurden, welche angeschrieben werden konnte, wenn sie nach Abschluss der Studie über die Ergebnisse informiert werden wollten. Es war nicht möglich die Studienteilnahme auf zwei verschiedene Sitzungen aufzuteilen, um den Einfluss von Stimmungen zu verringern. Die Studienteilnehmer/innen erhielten keine Aufwandsentschädigung.

3.5.5 Methoden der Datenauswertung

Die statistische Datenanalyse erfolgte mit Hilfe des Statistik Programms SPSS (Version 20). Fehlende Daten wurden mit dem Expectation-Maximization-Verfahren ergänzt. Littles MCAR Test (Little, 1988) zeigte, dass die fehlenden Daten zufällig fehlten.

Nach den Empfehlungen von Worthington & Whittaker (2006) sollte die anfängliche Validierung einer neuen Skala eine empirische Untersuchung der Faktorenstruktur beinhalten – unabhängig davon, wie gut die theoretisch zugrundeliegenden latenten Variablen durch die Items reproduziert wurden. Bei der Entwicklung neuer Skalen empfehlen sie daher erst eine exploratorische Faktorenanalyse (EFA) durchzuführen, gefolgt von einer konfirmatorischen

Faktorenanalyse (CFA). Byrne (2001, zit. n. Worthington & Whittaker, 2006) schreibt sogar, dass es ein Missbrauch der CFA sei, wenn sie in den anfänglichen Stufen der Skalenentwicklung angewandt würde. Bühner (2011) empfiehlt die EFA-Methode der Maximum-Likelihood-Methode, falls nach der EFA noch eine CFA durchgeführt werden soll, damit die Ergebnisse sich nicht aufgrund der Methode unterscheiden. Worthington & Whittaker (2006) stellen dar, dass die üblichen faktorenanalytischen Methoden (Hauptachsenanalyse und Maximum-Likelihood-Methode) den Zwecken der Skalenentwicklung eher gerecht werden als die Hauptkomponentenanalyse (PCA), da die PCA bezweckt die Anzahl der Items zu reduzieren und die ursprüngliche Itemvarianz soweit wie möglich zu erhalten, während die FA die zugrundeliegenden Faktoren sucht, welche für geteilte Varianz zwischen Items verantwortlich sind. Aus diesen Gründen wurde der Fragebogen zuerst mit einer EFA (Maximum-Liklihood-Methode) untersucht, um die zugrundeliegende Faktorenstruktur zu untersuchen.

Für die EFA wurde die Eignung der Daten zur Durchführung einer Faktorenanalyse anhand des Kaiser-Meyer-Olkin-Koeffizienten (KMO-Koeffizient) überprüft. Faktoren mit Eigenwerten größer als eins wurden behalten. Da die Guna-Faktoren nach den theoretischen Vorgaben und den (unter Vorbehalten berücksichtigten) Ergebnissen aus empirischen Arbeiten (Khemka et al., 2011; Krishna Rao & Harigopal, 1979; Marutham et al., 1998; Mohan & Sandhu, 1986; Wolf, 1998) nicht völlig unabhängig voneinander sind, wurde eine Promax-Rotation durchgeführt (nach der Empfehlung von Bühner (2011) für oblique Rotationen).

Ein Item musste folgende Kriterien erfüllen, um in einer der Tri-Guna Skalen behalten zu werden: es musste zur Drei-Faktoren-Struktur und zur Erhöhung der internen Konsistenz der Skala (Cronbachs α) beitragen.

Die Berechnung der Itemschwierigkeiten erfolgte nach der Formel für mehrstufige Items (Bortz & Döring, 2002): $p_i = \frac{\sum_{m=1}^{n} \mathrm{x_{im}}}{\mathrm{k_i * n}}$,

wobei p_i: Schwierigkeitsindex, $\sum_{m=1}^{n} \mathrm{x_{im}}$: Summe der erreichten Punkte auf Item i, n: Stichprobengröße, k_i: Anzahl der Antwortkategorien für Item i.

Die Trennschärfen- und Reliabilitätsanalyse fand im Rahmen der Reliabilitätsanalyse von SPSS statt.

3.5.6 Ergebnisse

Exploratorische Faktorenanalyse

Die exploratorische Faktorenanalyse aller 238 Items zeigte, dass sich die drei Faktoren nicht über alle Kategorien der Verhaltensgleichung ($V = fI$(kognitive, emotionale, motivationale und soziale Variablen, Variablen des Organismus und der Umgebung)) hinweg zeigten. Die inhaltliche Ähnlichkeit der Items in Bezug auf die jeweilige Kategorie der Verhaltensgleichung schien stärker zu sein, als die inhaltliche Ähnlichkeit der Items in Bezug auf die Gunas, so dass sich die Items v.a. nach den Kategorien zu Faktoren fügten, statt nach den drei Gunas. Um diese Verzerrung zu korrigieren, wurden die Items daraufhin auf der Ebene der einzelnen Kategorien und Subkategorien (z.B. Aktivitätsniveau und Volition für motivationale Variablen) der Verhaltensgleichung faktorenanalytisch untersucht. Auf diesem Niveau konnten die drei Faktoren der Gunas bei allen Kategorien beobachtet werden, mit Ausnahme der Kategorie „Variablen der Umgebung".

Aus dem Itempool wurden anhand der unter 3.5.5 aufgezählten Kriterien 113 Items für neun Skalen ausgewählt. Es wurde darauf geachtet, die Items in so wenig Skalen wie möglich zusammenzufassen, allerdings war die inhaltliche Vielfalt in zwei Kategorien (kognitive und motivationale Merkmale) immer noch so groß, dass es nötig war mehrere Subkategorien-Skalen zu bilden (für die kognitiven Merkmale *Kognition* und *Arbeitsstil* und für die motivationalen Merkmale *Motive*, *Spirituelle Ausrichtung*, *Volition* und *Aktivitätsniveau*). Die neun resultierenden Skalen heißen: *Kognition*, *Arbeitsstil*, *Emotionen*, *Motive*, *Spirituelle Ausrichtung*, *Volition*, *Aktivitätsniveau*, *Sozialverhalten* und *Gesundheit/Gesundheitsverhalten* (die KMO-Koeffizienten lagen für die Skalen zwischen .77 und .94 und zeigten somit eine mittlere bis sehr gute Eignung der Daten zur exploratorischen FA an). Inhaltlich erfassen die Skalen daher die Ausprägungen der Gunas in allen Kategorien der Verhaltensgleichung außer der Kategorie „Variablen der Umgebung".

Der Unterschied zwischen Haupt- und Fremdfaktorladung war bei 107 Items ≥ .15, bei sechs Items allerdings < .15.

Analyse der Itemschwierigkeiten, Trennschärfen und internen Konsistenzen

Bei der Analyse der Itemschwierigkeiten, Trennschärfen und internen Konsistenzen sollte festgestellt werden, ob diese Werte für die Fragebogenitems in den jeweiligen definierten Bereichen liegen.

a) Itemschwierigkeit: Von 113 Items lagen 100 Items im Bereich von .2 bis .8, 11 wiesen eine Itemschwierigkeit unter .2 auf und zwei einen Wert über .8.

b) Trennschärfe: Bei 110 Items lag die Trennschärfe über .3, bei drei Items darunter.

c) Interne Konsistenz: Bei 22 von 27 Subskalen (neun Skalen mal drei Faktoren: Sattva, Rajas und Tamas) lag die interne Konsistenz über .7, bei fünf der Subskalen nicht (*Tamas Kognition*, *Rajas Arbeitsstil*, *Sattva Spirituelle Ausrichtung*, *Sattva Sozialverhalten*, *Tamas Sozialverhalten*).

3.5.7 Diskussion

In Studie 1 wurde festgestellt, dass sich die drei Gunas nicht mit einer Skala mit klarer Drei-Faktorenstruktur über alle Kategorien der Verhaltensgleichung messen lassen, sondern dass aufgrund der inhaltlichen Breite des Modells mehrere Skalen nötig sind, damit die empirisch gefundene Faktorenstruktur den Gunas entspricht. Entsprechend der Kategorien und Subkategorien der Verhaltensgleichung wurden separate Skalen zur Erfassung der Gunas gebildet. Dabei wurden 125 Items aus dem Fragebogen entfernt (von ursprünglich 238). Die restlichen 113 Items ergaben neun Skalen zur Erfassung der Gunas in den Kategorien und Subkategorien der Verhaltensgleichung.

Für die Kategorie „Variablen der Umgebung“ der Verhaltensgleichung konnte keine Skala gebildet werden. Diese Kategorie hatte mit nur sechs Items zu wenig Items (und theoretische Indikatoren) für drei Faktoren. Die Itemanzahl der anderen Kategorien reichte von 28 bis 65. Faktoren mit nur zwei Items sollten nur beibehalten werden, wenn die Items hoch miteinander korrelieren ($r > .7$, Worthington & Whittaker, 2006). Das war für keine der zwei Items der Faktoren der Fall (Sattva: $r = .1$; Rajas: $r = .08$; Tamas: $r = .03$, alle Korrelationen waren nicht signifikant). Die Kategorie und Skala „Variablen der Umgebung“ wurde deshalb nicht im Fragebogen behalten.

Die Ziele die Faktorenstruktur des Fragebogens zu untersuchen und den Itempool zu reduzieren wurden in dieser Studie erreicht. Zum großen Teil liegen die weiteren untersuchten psychometrischen Eigenschaften der Items und Skalen (Itemschwierigkeit, Trennschärfen und interne Konsistenz) in den Soll-Bereichen, allerdings gibt es bei jedem der Merkmale für einige Items bzw. Skalen noch Verbesserungspotential.

Der Fragebogen sollte in einer weiteren Studie überarbeitet werden. Dabei sollte das Augenmerk auf den Items und Skalen liegen, deren psychometrische Eigenschaften sich außerhalb der Soll-Wert-Bereiche befinden. Items bei denen der Unterschied zwischen Haupt- und Fremdfaktorladung nicht $\geq .15$ ist, zu leichte oder schwere Items (im Sinne der Itemschwierigkeit) und Items mit geringer Trennschärfe sollten durch eine Umformulierung verbessert oder durch neu formulierte Items ersetzt werden. Die interne Konsistenz von Skalen, die unterhalb von .7 liegt, sollte erhöht werden, in dem der Skala neue Items hinzugefügt werden, oder Items ausgetauscht werden. Dabei sollte darauf geachtet werden,

dass der Fragebogen insgesamt nicht zu lang wird, damit er für Forschungszwecke geeignet sein wird.

Da die erste exploratorische Faktorenanalyse ein überraschend anderes Ergebnis gezeigt hat, als erwartet, wurden relativ viele Items aus dem Fragebogen entfernt. Angesichts der verbesserungsbedürftigen Items und Skalen, die im Fragebogen enthalten sind, müssen, wie oben erläutert, neue Items generiert werden. Obwohl der ursprüngliche Plan war an die EFA aus Studie 1 in einer zweiten Studie eine CFA anzuschließen, erfordert die Tatsache, dass neue Items hinzugefügt werden müssen, eine weitere EFA, bevor zu einer CFA-Studie übergegangen werden kann (siehe Worthington & Whittaker, 2006).

Während die Richtlinien von Bühner (2011) die Stichprobengröße von 337 aus Studie 1 als „gut“ für eine EFA bewerten, würde eine noch größere Stichprobe in Studie 2 zu genaueren Schätzungen der Faktorladungen führen.

In einer neuen Studie sollte auch die Validität des Fragebogens stärker thematisiert werden. Dabei können zum Beispiel zusätzlich die Korrelationen der einzelnen Skalen untereinander und zu Skalen aus anderen Fragebögen untersucht werden.

Insgesamt sollten in einer nächsten Studie also neue Items generiert werden, der Fragebogen von einer größeren Stichprobe ausgefüllt, dann mit einer weiteren EFA und Item- und Skalenanalyse untersucht werden und schließlich sollten auf der Grundlage der neuen Analysen wieder Entscheidungen getroffen werden, welche Items im Fragebogen behalten werden sollten. Außerdem sollten zusätzliche Fragebögen eingesetzt werden, die ähnliche oder unähnliche Konstrukte messen und deren Skalen mit den jeweiligen Guna-Skalen entweder positiv oder negativ korrelieren müssten, um die Validität der TGS noch umfassender zu untersuchen.

3.6 Studie 2

3.6.1 Ziele und Hypothesen

In Studie 1 wurde die generelle Messbarkeit der drei Guna-Faktoren sichergestellt und mit neun Skalen eine erste Rohfassung eines Fragebogens konstruiert. Die Rohfassung des Fragebogens wies allerdings einige Mängel in den psychometrischen Eigenschaften der Items und Skalen auf, welche wir in Studie 2 durch eine Umformulierung vorhandener Items und das Hinzufügen neuer Items verbessern wollten. Außerdem sollte die Validität des Fragebogens noch besser untersucht werden.

In Studie 2 wurden zwei Hauptforschungsfragen untersucht. Im folgenden Abschnitt werden die Fragen dargestellt und die gewählten Ansätze zur Beantwortung der Fragen grob skizziert.

1) Welche der (neuen und alten) Items sollten im Fragebogen behalten werden?

Zur Beantwortung dieser Frage wurden zunächst Kennwerte in Bezug auf die Faktorenstruktur betrachtet: die Faktorladungen der Items, die Differenz zwischen den Beträgen der Haupt- und Fremdfaktorladungen und die Größe der Fremdfaktorladungen. Desweiteren wurden die Itemschwierigkeiten und Trennschärfen der Items und die internen Konsistenzen der Skalen untersucht.

2) Wie valide messen die TGS die drei Gunas?

Zur Beantwortung dieser Forschungsfrage kommt die Untersuchung verschiedener Validitätsarten in Frage. Generell wird zwischen drei Arten der Validität von Fragebögen unterschieden: der Inhalts-, Kriteriums- und Konstruktvalidität (Bortz & Döring, 2002; Bühner, 2011; Sedlmeier & Renkewitz, 2013). Die Inhaltsvalidität ist gewährleistet, wenn der Fragebogen die wichtigsten Aspekte des angestrebten Konstrukts erschöpfend erhebt und kann nicht numerisch bestimmt werden (Bortz & Döring, 2002). Die Formulierung eines umfassenden Arbeitsmodells für die Gunas und die erschöpfende Ableitung des Fragebogens aus diesem Modell haben die Inhaltsvalidität der TGS während der Fragebogenkonstruktion gewährleistet.

An dieser Stelle der Fragebogenentwicklung sollten für die weitere Untersuchung der Validität der TGS Korrelationen zwischen den einzelnen Guna-Skalen untereinander und die Korrelationen der Guna-Skalen mit den Skalenwerten von für die Gunas relevanten Merkmalen gemessen werden. Dieses Vorgehen kann entweder als Überprüfung der Übereinstimmungsvalidität (als Unterform der Kriteriumsvalidität) oder als die Untersuchung korrelationsstatistischer Zusammenhänge (als Methode der Konstruktvalidierung) betrachtet werden (Bortz & Döring, 2002).

Andere Vorgehensweisen zur Überprüfung der Validität wurden nicht gewählt, da sie entweder zu aufwendig wären (wie zum Beispiel die Feststellung der prognostischen Validität, die Messungen zu verschiedenen Zeitpunkten verlangt) oder Messmethoden bedürften, die es noch nicht gibt (zum Beispiel einem zweiten validen Guna-Fragebogen zur Feststellung der konvergenten Validität).

Es wurden folgende Hypothesen formuliert, welche bestätigt werden sollten, wenn die Validität hoch wäre:

1a) Positive Korrelationen mit den Sattva-Skalen: Die Sattva-Skalen korrelieren positiv untereinander und mit Lebenszufriedenheit, gehobener Stimmung, Ruhe, Aktiviertheit im positiven Sinne, Arbeitsengagement, körperlichem Wohlbefinden, Verträglichkeit, Gewissenhaftigkeit, emotionaler Stabilität und Offenheit.

1b) Negative Korrelationen mit den Sattva-Skalen: Die Sattva-Skalen korrelieren negativ mit den Rajas- und Tamas-Skalen und mit Energielosigkeit, Deprimiertheit, Erregtheit, Ärger, Stresserleben, Mindwandering und Daydreaming.

2a) Positive Korrelationen mit den Rajas- und Tamas-Skalen: Die Rajas- und Tamas-Skalen korrelieren positiv untereinander und miteinander und positiv mit Ärger, Stresserleben, Mindwandering und Daydreaming. Die Rajas-Skalen korrelieren außerdem positiv mit Erregtheit und die Tamas-Skalen mit Energielosigkeit und Deprimiertheit.

2b) Negative Korrelationen mit den Rajas- und Tamas-Skalen: Die Rajas- und Tamas-Skalen korrelieren negativ mit den Sattva-Skalen, Lebenszufriedenheit, gehobener Stimmung, Ruhe, Aktiviertheit im positiven Sinne, Arbeitsengagement, körperlichem Wohlbefinden, Verträglichkeit, Gewissenhaftigkeit, emotionaler Stabilität und Offenheit.

3.6.2 Weiterentwicklung der Skalen

Um weniger passende Items durch bessere zu ersetzen, wurden von den Indikatoren der Gunas, welche im Arbeitsmodell (Tabelle 1) zusammengetragen wurden, weitere 56 Items generiert. 11 Items, deren Itemschwierigkeiten unterhalb von .2 oder oberhalb von .8 lagen, wurden umformuliert, so dass sie leichter bzw. schwieriger wurden (z.B. wurde dieses Item, das von der großen Mehrheit verneint wurde: „Ich bin lieber untätig, als meine Pflichten zu erfüllen.“ so umformuliert: „Ich bin *oft* lieber untätig, als meine Pflichten zu erfüllen.“ um es „leichter“ zu machen). In Studie 2 wurden insgesamt 169 Items untersucht. Aufgrund der geringen Anzahl der Indikatoren für „Variablen der Umgebung“ im Arbeitsmodell wurde nicht versucht für diese Variablengruppe eine neue Skala zu entwerfen.

3.6.3 Weitere Fragebögen

Zur Untersuchung der Konstruktvalidität wurden die folgenden weiteren Fragebögen eingesetzt (siehe Anhang 3.8.5). Diese Fragebögen messen Merkmale, die im Kontext der Gunas relevant und mit einer der Gunas entweder positiv bzw. mit einer der anderen oder beiden anderen negativ korrelieren sollten.

Psychisches Befinden

Eine Hauptannahme des Guna-Modells ist, dass Wohlbefinden und Zufriedenheit zunehmen, je stärker Sattva-Guna in einer Person ist und abnehmen, wenn Rajas und/oder Tamas stärker sind. Aus diesem Grund wurden zwei Fragebögen zur Messung des Wohlbefindens ausgewählt, um die Zusammenhänge zwischen den TGS und psychischem Befinden überprüfen zu können.

Dabei wurde das psychische Befinden mit zwei Fragebögen erfasst: der Habituellen Subjektiven Wohlbefindensskala (HSWBS, Dalbert, 2010) und den Befindlichkeitsskalen zur Messung von aktueller Stimmung und Grundgestimmtheit (BFS, Abele-Brehm & Brehm, 2003). Während die HSWBS Merkmale misst, die positiv mit Sattva in Zusammenhang stehen sollten, messen die BFS zusätzlich auch Merkmale, die mit Rajas und Tamas in einem positiven Zusammenhang stehen müssten.

Die HSWBS erfasst mit 13 Items habituelles subjektives Wohlbefinden in zwei Skalen, der Skala *Allgemeine Lebenszufriedenheit* und der Skala *Stimmungsniveau*. Die Retest-Reliabilität beider Skalen lag für junge Erwachsene bei über .8 und die interne Konsistenz lag in allen Stichproben über .8 (Dalbert, 2003). Die Konstruktvalidität ist sowohl in Hinblick auf die faktorielle Validität, als auch der Kriteriumsvalidität belegt.

Die BFS bestehen aus acht Skalen: *Aktiviertheit*, *Gehobene Stimmung*, *Besinnlichkeit*, *Ruhe*, *Ärger*, *Erregtheit*, *Deprimiertheit* und *Energielosigkeit*. Die Instruktion kann entweder dazu auffordern die Items in Hinblick auf die aktuelle Stimmung oder die Grundgestimmtheit zu beantworten. Da die Befindenswerte auf dem Trait-State-Kontinuum an ähnlicher Stelle liegen sollten wie die Guna-Werte und da die TGS habituelle Merkmale erfassen, wurde in dieser Studie die Instruktion zur Messung der Grundgestimmtheit gewählt. Die internen Konsistenzen der Skalen liegen über .8 mit Ausnahme der Skala *Besinnlichkeit* (niedrigste r = .63; Abele-Brehm & Brehm, 2003). Untersuchungen zur faktoriellen Validität, konvergenten und diskriminanten Validität sprechen für eine hohe Validität der Skalen (Abele-Brehm & Brehm, 1986).

Körperliches Wohlbefinden

Neben dem psychischen Wohlbefinden spielt auch das körperliche Wohlbefinden eine Rolle im Guna-Modell. Um zu überprüfen, ob wie vermutet die Sattva-Skalen positiv und die Rajas- und Tamas-Skalen negativ mit körperlichem Wohlbefinden korrelieren, wurde das habituelle körperliche Wohlbefinden mit dem Fragebogen zur Erfassung körperlichen Wohlbefindens (FEW 16, Kolip & Schmidt, 1999) gemessen. Der FEW 16 besteht aus vier Skalen (mit jeweils vier Items): *Belastbarkeit*, *Vitalität*, *Genussfähigkeit* und *Innere Ruhe*. Die internen

Konsistenzen der Gesamtskala und der Subskalen liegen über .8 und die Retest-Reliabilitäten liegen in einer Studierenden-Stichprobe über .7 (Kolip & Schmidt, 1999). Die Skalen wurden faktorenanalytisch gebildet und die Korrelationen der Gesamtskala mit relevanten Kriterien liegen im mittleren Bereich von r = .34 bis .57.

Stresserleben

Um auch die Zusammenhänge zwischen den TGS und Stresserleben zu betrachten, wurde das subjektive Belastungserleben mit der Weiterentwicklung des Perceived Stress Questionnaire (PSQ) für den deutschsprachigen Raum erfasst (Fliege, Rose, Arck, Levenstein & Klapp, 2001). Der Fragebogen besteht aus 20 Items, die auf vier Skalen aufgeteilt sind: *Sorgen*, *Anspannung*, *Freude* und *Anforderungen*. Die Skalen wurden anhand der Ergebnisse einer exploratorischen Faktorenanalyse gebildet. In der untersuchten Gesamtstichprobe lagen die internen Konsistenzen über .8. Konvergente und Kriteriumsvalidität konnten belegt werden.

Arbeitsengagement

Arbeitsengagement wird als Gegenpol von Burn-out bezeichnet und ist somit ein wichtiger Indikator psychischer Gesundheit bzw. von dominanter Sattva-Guna. Es wird als „positiver, erfüllender, arbeitsbezogener Geisteszustand definiert, der durch Elan, Beteiligung und Vertieftsein charakterisiert wird“ (Schaufeli, Salanova, González-Romá & Bakker, 2002, S. 74). Es wurde mit der deutschen Kurzversion der Utrecht Workengagement Scale (UWES-9) gemessen (Schaufeli, Bakker & Salanova, 2006). Die Skala besteht aus neun Items, welche die drei genannten Dimensionen von Arbeitsengagement messen. Die internen Konsistenzen (Cronbachs α) der einzelnen Skalen der deutschen Kurzversion liegen über .7, für die Gesamtskala über .85. Die faktorielle Validität ist mittels konfirmatorischer Faktorenanalysen bestätigt.

Mindwandering und Daydreaming

Laut den Modellannahmen kann Sattva-Guna durch Meditation gestärkt werden und steht in positivem Zusammenhang mit der Fähigkeit die Aufmerksamkeit zu fokussieren (im Gegensatz zur Raja- und Tama-Guna). Um empirisch zu prüfen, ob die TGS die Gunas in diesem Sinne erfassen, wurden Mindwandering und Daydreaming mit einer Kurzversion (Eberth, 2014) des Imaginal Process Inventory (IPI) von Singer und Antrobus (1970) gemessen. Diese Kurzversion des IPI besteht aus zwei Skalen: *Mindwandering* und *Daydreaming* mit jeweils fünf Items, welche auf einer fünf-stufigen Ratingskala beantwortet werden. Die *Mindwandering* Skala erfasst, wie häufig die Aufmerksamkeit einer Person von der momentanen Tätigkeit abschweift und die *Daydreaming* Skala erfasst die Häufigkeit von

Tagträumen und Fantasien. Eine exploratorische Faktorenanalyse (Maximum-Likelihood-Methode, Varimax-Rotation, Extraktion basierend auf Eigenwert größer als eins) mit den Daten von Studie 2 zeigt, dass die Daten dieser Skalen gut für eine FA geeignet sind (KMO-Koeffizient = .89) und die Items auf der jeweiligen Skala laden. Ein Item der Skala *Mindwandering* hatte eine hohe Fremdfaktorladung auf der *Daydreaming* Skala (Unterschied < .15). Die internen Konsistenzen (Cronbachs α) der Skalen sind hoch: für die *Mindwandering* Skala bei .81 und für die *Daydreaming* Skala bei .95.

Big Five

Wie Achtsamkeit, kann die individuelle Guna-Ausprägung sowohl als *trait* als auch *state* gesehen werden. Auf diese Weise hat das Guna Modell auch Aspekte einer Persönlichkeitstheorie (Puta & Sedlmeier, 2014). Um die Validität der TGS auch in dieser Hinsicht zu überprüfen, wurden ihre Zusammenhänge mit einer der bekanntesten Persönlichkeitstheorien untersucht – den Big Five. Die fünf Persönlichkeitsdimensionen Extraversion, Verträglichkeit, Gewissenhaftigkeit, emotionale Stabilität und Offenheit für Erfahrungen wurden mit der deutschen Version des Ten-Item Personality Inventory (TIPI-G) gemessen (Muck, Hell & Gosling, 2007).

Da wir in dieser Studie hauptsächlich auf freiwillige Versuchspersonen angewiesen waren, die Anzahl an zu beantwortenden Items schon recht hoch und die Big Five nicht die Hauptkriterien zur Validierung der TGS darstellen, entschieden wir uns für das TIPI-G. Muck et al. (2007) zeigten, dass das TIPI-G als valide Kurzform des NEO-PI-R gelten kann, um die Big Five auf effiziente Weise zu messen. Die Reliabilitätswerte sind geringer als üblich, angesichts der hohen Kontentvalidität und Kürze des Inventars aber akzeptabel. Die Fit-Werte des Modells sind im Vergleich zu anderen konfirmatorischen Faktorenanalysen von Big Five Inventaren gut.

3.6.4 Stichprobe

An der zweiten Studie haben im Zeitraum vom März bis Juni 2013 455 Personen teilgenommen. Davon waren 76.5% Frauen. Die Studienteilnehmer/innen waren 18–76 Jahre alt (Ø 39.6 Jahre) und wurden ähnlich wie bei Studie 1 über eine Facebook-Anzeige für Yoga-Interessierte, Aushänge in Yoga Zentren und den Newsletter der Veden Akademie kontaktiert. Um eine möglichst große Stichprobe zu erzielen wurden weiterhin persönliche Einladungen an Bekannte und Teilnehmer/innen von Studie 1 verschickt. Außerdem konnten Studierende der TU Chemnitz und FU Hagen durch die Teilnahme eine Versuchspersonenstunde bekommen (Anteil an Gesamtstichprobe 14.3 %). 12.7% der Personen hatten schon an Studie 1 teilgenommen.

3.6.5 Vorgehensweise und Materialien

Die Vorgehensweise war die gleiche wie bei Studie 1: die Teilnehmer/innen kamen über den Link der Anzeige auf eine Webseite, auf der sie begrüßt und instruiert wurden und die TGS online ausgefüllt haben (die wieder mit der Software *Limesurvey* bereitgestellt wurden). Die Studienteilnehmer/innen erhielten keine Aufwandsentschädigung.

3.6.6 Methoden der Datenauswertung

Die Daten wurden mit SPSS (Version 21) analysiert. Die Umfragesoftware *Limesurvey* wurde bei Studie 2 so eingestellt, dass die Umfrage nicht abgeschlossen werden konnte, wenn nicht alle Fragen beantwortet waren – deshalb kam es nicht zu fehlenden Daten. Die Trennschärfen- und Reliabilitätsanalyse wurde wieder über die Reliabilitätsanalyse von SPSS durchgeführt. Die Itemschwierigkeiten wurden nach der gleichen Formel berechnet, die bei Studie 1 verwendet wurde.

Aufgrund der großen Anzahl neuer Items im Fragebogen (ein Drittel der Gesamtanzahl), war es nötig, die Faktorenstruktur mit einer weiteren exploratorischen Faktorenanalyse zu untersuchen. Eine konfirmatorische Faktorenanalyse ist für die Validierung eines Fragebogens in den anfänglichen Stadien der Konstruktion nicht geeignet (Worthington & Whittaker, 2006).

Die Eignung der Daten zur Durchführung einer EFA wurde anhand des Kaiser-Meyer-Olkin-Koeffizienten (KMO-Koeffizient) überprüft. Weiterhin wurden wieder die Maximum-Likelihood-Methode und Promax-Rotation ausgewählt. Folgende Richtlinien wurden genutzt, um über die Eignung eines Items für die jeweilige Skala zu entscheiden (nach den Empfehlungen von Worthington & Whittaker, 2006): eine Faktorladung über .32, eine Differenz zwischen den Beträgen von Haupt- und Fremdfaktorladung von mindestens .15 und Fremdfaktorladungen $\leq$ .32. Außerdem mussten die Items zur Erhöhung der internen Konsistenz beitragen und die Trennschärfen mussten > .3 sein.

3.6.7 Ergebnisse

Zu Beginn der Studie wurden zwei Forschungsfragen gestellt: 1) welche Items sollten im Fragebogen behalten werden und 2) wie valide messen die TGS die drei Gunas?

Zunächst werden die Ergebnisse zur ersten Frage dargestellt. Zur Beantwortung der Frage, welche Items im Fragebogen behalten werden sollten, wurde die Faktorenstruktur der Skalen untersucht, die Itemschwierigkeiten und Trennschärfen der Items und die internen Konsistenzen der Subskalen.

Skalen zu kognitiven Merkmalen

Tabelle 3 gibt einen Überblick über die Items, welche in der Skala *Kognition* beibehalten wurden und deren jeweiligen psychometrischen Eigenschaften. Die Skala besteht aus 14 Items, welche auf drei Faktoren laden, von denen jeder einer der Gunas zugeordnet werden kann. Die Faktorladungen sind alle > .32, die Differenz zwischen den Beträgen von Haupt- und Fremdfaktorladungen sind > .15 und die Fremdfaktorladungen ≤ .32. Die Itemschwierigkeit liegt allerdings nicht bei allen Items im Sollbereich – bei drei Items der Tamas-Subskala ist sie kleiner als .2. Das deutet darauf hin, dass diese Items von (zu) vielen Studienteilnehmer/innen verneint wurden, so dass sie nicht ausreichend zwischen den Probanden differenzieren. Die Trennschärfen der Items sind größer als .3, das heißt, die Werte der einzelnen Items stimmen in ausreichendem Maße mit den Gesamtskalenwerten überein. Cronbachs α liegt nur bei der Rajas-Subskala über .7, für die Sattva und Tamas Subskalen liegt der Wert knapp darunter.

Tabelle 3 Kognition

Item-Nr.	Item	Faktorladungen			Item-schwierigkeit	Trennschärfe
		Rajas	Tamas	Sattva		
55.	Meine Gedanken sind oft hektisch.	**.91**	-.06	.02	.28	.81
7.	Meine Gedanken rasen oft.	**.83**	-.05	.03	.34	.74
31.	Meine Gedanken sind wie eine unaufhaltsame Flutwelle.	**.77**	.03	.03	.31	.71
64.	Meine Gedanken schwanken hin und her.	**.7**	.1	-.03	.32	.7
29.	Ich bin oft nervös.	**.66**	-.03	-.14	.27	.67
20.	Wenn möglich, umgehe ich Aufgaben, die tiefgründiges Nachdenken erfordern.	.15	**.69**	.04	.15	.52
9.	Ich wäge nur so tiefgründig ab, wie ich muss.	.00	**.61**	.19	.23	.37
95.	Ich bin dafür bekannt, dass ich Dinge gut durchdenke. (U)	-.09	**.44**	-.21	.13	.41
59.	Ich hinterfrage meine Sichtweise selten.	.02	**.43**	-.05	.19	.41
93.	Lange philosophische Gespräche reizen mich kaum.	-.1	**.41**	-.14	.22	.38
86.	Ich hole mir selten weitere Informationen ein, um meine Meinung zu überprüfen.	-.04	**.36**	-.06	.21	.33
92.	Auch wenn sich etwas nicht so entwickelt, wie ich es erwartet habe, fällt es mir leicht die neue Situation als Gegebenheit anzunehmen.	-.02	.04	**.69**	.52	.51
23.	Mir fällt es leicht mich auf die positiven Aspekte einer Situation zu konzentrieren.	-.15	.01	**.59**	.52	.5
79.	Ich lerne etwas aus jeder Erfahrung im Leben.	.03	-.12	**.54**	.65	.46
	Cronbachs α	.89	.67	.68		

Items, die mit (U) gekennzeichnet sind, wurden umkodiert.

In Tabelle 4 ist die Skala *Arbeitsstil* zur Erfassung der habituellen Art zu arbeiten (je nach dominanter Guna) abgebildet. Die Skala besteht aus 14 Items, die mit Faktorladungen > .32 auf drei Faktoren laden. Die Differenzen der Beträge dieser Ladungen und den Fremdfaktorladungen sind > .15 und die Fremdfaktorladungen ≤ .32. Die Itemschwierigkeiten und Trennschärfen der Items liegen im Sollbereich. Die internen Konsistenzen der Subskalen sind bis auf die Rajas-Subskala über .7.

Tabelle 4 Arbeitsstil

Item-Nr.	Item	Faktorladungen Tamas	Sattva	Rajas	Item-schwierigkeit	Trennschärfe
68.	Ich bin oft lieber untätig, als meine Pflichten zu erfüllen.	**.82**	-.05	-.17	.25	.68
43.	Ich schiebe Aufgaben oft vor mir her.	**.78**	.03	-.04	.39	.65
88.	Um arbeiten zu können muss ich oft eine innere Trägheit überwinden.	**.75**	.04	.14	.31	.68
117.	Mir fällt es oft schwer nutzbringend tätig zu sein.	**.5**	-.11	.17	.2	.56
33.	Beim Erfüllen meiner Pflichten gehe ich sehr genau vor.	.04	**.76**	-.01	.54	.59
97.	Ich arbeite sorgfältig.	.01	**.76**	-.09	.59	.61
76.	Ich bin sehr pflichtbewusst.	-.19	**.57**	.14	.57	.35
114.	Ich gehe vorausschauend vor.	.05	**.45**	-.06	.54	.55
109.	Ich messe den Erfolg des Tages daran, wie viel ich geschafft habe.	-.01	.03	**.56**	.35	.43
65.	Ich arbeite stürmisch.	-.06	-.13	**.5**	.24	.38
115.	Selbst wenn ich mit einer Aufgabe gut in der Zeit liege, bin ich bestrebt so schnell wie möglich fertig zu werden.	-.21	.03	**.5**	.4	.31
57.	Manchmal bin ich genervt, dass die Dinge so langsam vorangehen.	.17	.07	**.47**	.46	.43
70.	Misserfolge sind sehr schmerzlich für mich.	.27	.06	**.43**	.41	.41
116.	Nach einem Erfolg bin ich wie berauscht.	.03	-.11	**.43**	.37	.35
	Cronbachs α	.82	.73	.66		

Skala zu emotionalen Merkmalen

Die Skala *Emotionen* (Tabelle 5) besteht aus 16 Items und drei, in Bezug auf die Faktorenstruktur, deutlich erkennbaren Subskalen. Bis auf zwei Items der Tamas-Subskala, deren Itemschwierigkeiten unter .2 liegen, sind alle untersuchten Kennwerte innerhalb der Sollbereiche. Von den insgesamt neun Tri-Guna-Skalen, sind die Cronbachs α-Werte der Subskalen dieser Skala am höchsten ($\geq$ .87).

Tabelle 5 Emotionen

Item-Nr.	Item	Faktorladungen Rajas	Sattva	Tamas	Item-schwierigkeit	Trennschärfe
8.	Ich fühle mich häufig ruhelos.	**.87**	.1	-.02	.32	.72
1.	Ich fühle mich oft ungeduldig.	**.79**	-.04	-.2	.38	.64
47.	Ich fühle mich oft aufgewühlt.	**.72**	.1	.18	.24	.72
2.	Ich bin emotional ziemlich wechselhaft.	**.69**	.1	.11	.37	.66
73.	Ich fühle mich oft angespannt.	**.68**	-.04	.09	.34	.69
78.	Mich kann man schnell auf die Palme bringen	**.55**	-.1	-.06	.29	.56
84.	Ich bin meistens vergnügt.	-.1	**.82**	.04	.52	.78
16.	Im Allgemeinen bin ich fröhlich.	.1	**.69**	-.23	.56	.72
103.	Ich bin meistens sehr glücklich.	-.01	**.67**	-.23	.47	.78
96.	Ich erfahre häufig eine allumfassende Liebe, die alle vereint.	-.1	**.66**	.14	.42	.59
12.	Ich verspüre eine tiefe Verbundenheit zu anderen Menschen und Lebewesen.	.16	**.61**	.07	.59	.45
102.	Ich fühle mich emotional fast immer wohl.	-.3	**.46**	-.17	.49	.72
105.	Meistens bin ich traurig.	-.07	.06	**1.02**	.17	.86
99.	Meistens bin ich unglücklich.	-.03	-.05	**.9**	.16	.85
51.	Ich fühle mich oft depressiv.	.12	-.09	**.68**	.23	.83
35.	Ich fühle mich häufig bekümmert.	.36	-.02	**.53**	.28	.8
	Cronbachs α	.87	.87	.93		

Skalen zu motivationalen Merkmalen

Auch für die Skala *Motive* (Tabelle 6), die aus 12 Items besteht, liegen die Kennwerte innerhalb der Sollbereiche. Wieder liegen die Itemschwierigkeiten zweier Items der Tamas-Subskala unterhalb von .2.

Tabelle 6 Motive

Item-Nr.	Item	Faktorladungen Rajas	Sattva	Tamas	Item-schwierigkeit	Trennschärfe
120.	Ich bin motiviert viel Geld zu verdienen.	**.79**	.03	-.06	.34	.64
82.	Ich wünsche mir ein luxuriöses Leben.	**.7**	.01	.26	.27	.63
36.	In Bezug auf meine materielle Situation habe ich keine großen Ambitionen. (U)	**.69**	.01	-.14	.42	.57
66.	Materielle Dinge reizen mich nicht. (U)	**.6**	-.09	-.1	.38	.52
26.	Spiritueller Fortschritt ist mir sehr wichtig.	-.02	**.87**	.1	.53	.68
63.	Ich glaube, dass Spiritualität glücklich macht.	-.02	**.78**	.06	.61	.64
17.	Ich fühle mich manchmal erleuchtet durch die Energie des Kosmos, Gottes oder der Natur.	.09	**.65**	-.18	.41	.58
42.	Mein Leben orientiert sich stark an ethischen Prinzipien.	-.11	**.34**	-.01	.53	.34
40.	Ich fühle mich oft hoffnungslos.	-.11	-.01	**.84**	.19	.58
89.	Ich wünsche mir häufig Dinge, die ich nicht bekommen kann.	.2	-.04	**.63**	.22	.53
18.	Mir fällt es oft sehr schwer, mich zu entscheiden.	-.1	-.09	**.52**	.34	.45
28.	Andere warnen mich, dass ich mir nicht so viele falsche Hoffnungen machen soll.	-.06	.13	**.46**	.17	.38
	Cronbachs α	.78	.76	.7		

Items, die mit (U) gekennzeichnet sind, wurden umkodiert.

Tabelle 7 gibt einen Überblick über die Skala *Aktivitätsniveau*, die aus 14 Items besteht. Die Kennwerte liegen alle in den Sollbereichen. Die Trennschärfe des Items „Ich arbeite hart." der Rajas-Subskala ist allerdings mit r = .302 nur knapp > .3.

Tabelle 7 Aktivitätsniveau

Item-Nr.	Item	Faktorladungen Tamas	Sattva	Rajas	Item-schwierigkeit	Trennschärfe
113.	Ich bin träge.	**.88**	.08	-.14	.23	.71
45.	Mir fehlt es häufig an Motivation bzw. Antrieb.	**.73**	-.1	-.03	.32	.69
111.	Ich gehe oft ziellosen und nebensächlichen Tätigkeiten nach.	**.69**	.04	-.01	.32	.59
39.	Ich bin sehr oft müde.	**.64**	-.05	.19	.54	.58
44.	Ich bin fleißig, achte aber darauf, mich nicht übermäßig zu erschöpfen.	-.05	**.83**	.17	.46	.63
69.	Ich achte auf meine Grenzen.	.12	**.77**	.01	.45	.57
119.	Ich achte auf eine Balance zwischen Arbeit und Erholung.	.02	**.76**	.04	.5	.61
98.	Ich weiß, wenn eine Sache Zeit zum Gedeihen braucht und mehr Anstrengung nicht weiter führt.	-.09	**.48**	.14	.5	.4
53.	Ich bin häufig übermäßig aktiv oder bemüht.	-.16	-.07	**.58**	.33	.52
49.	Ich überanstrenge mich oft.	.16	-.24	**.57**	.34	.54
21.	Ich arbeite hart.	-.13	.17	**.55**	.48	.3
54.	In meinem Leben gibt es wenig Ruhe.	.04	-.29	**.53**	.32	.57
80.	Wenn ich nicht aktiv bin, fühle ich mich unwohl.	.01	.21	**.5**	.37	.33
32.	Wenn ich Besuch habe, bleib ich selten lange sitzen.	.15	.05	**.4**	.31	.36
	Cronbachs α	.82	.75	.7		

Die Skala *Volition* (Tabelle 8) besteht aus 14 Items. Die Aufteilung der Items auf drei Guna-Faktoren ist eindeutig, allerdings besteht die Sattva-Subskala aus nur zwei Items, die aber stark und hoch signifikant miteinander korrelieren (r = .65, p = 0). Die Faktorladungen, Trennschärfen und internen Konsistenzen liegen innerhalb der Sollbereiche. Die Itemschwierigkeiten von zwei Rajas-Items liegen unterhalb von .2.

Tabelle 8 Volition

Item-Nr.	Item	Faktorladungen			Item-schwierigkeit	Trennschärfe
		Tamas	Rajas	Sattva		
118.	Obwohl ich aktiv werden müsste, bleibe ich häufig untätig.	**.85**	0	-.07	.28	.73
81.	Mir fehlt es oft an Willenskraft.	**.8**	-.06	.1	.26	.74
34.	Ich bin nicht ausdauernd.	**.72**	-.05	-.04	.25	.62
100.	Es fällt mir schwer mich zu disziplinieren.	**.73**	-.06	.1	.3	.69
108.	Ich bin meistens ziemlich faul.	**.72**	.08	-.04	.23	.68
13.	Ich helfe am liebsten, wenn auch ich davon profitiere.	-.15	**.72**	.04	.22	.53
61.	Ich erfülle meine Pflichten nur, wenn dabei ein direkter Nutzen für mich entsteht.	.14	**.65**	-.14	.13	.59
11.	Ich bin etwas gierig.	.01	**.65**	.04	.21	.56
90.	Ich bin bescheiden. (U)	-.07	**.47**	-.02	.16	.35
38.	Ich bin öfters neidisch auf andere.	.15	**.46**	.13	.2	.53
50.	Egal was ich erwerbe oder erreiche, ich wünsche mir meistens mehr.	.21	**.44**	-.01	.26	.52
46.	Während ich meine Arbeit erledige, denke ich nicht an Belohnung. (U)	-.06	**.44**	-.02	.56	.36
106.	Meine Entschlossenheit ist unerschütterlich.	.04	0	**-.83**	.48	.65
107.	Ich bin standhaft.	-.08	.02	**-.76**	.52	.65
	Cronbachs α	.87	.76	.79		

Items, die mit (U) gekennzeichnet sind, wurden umkodiert.

Auch bei der Skala *Spirituelle Ausrichtung* (Tabelle 9) besteht die Sattva-Subskala aus nur zwei Items, die stark und hoch signifikant korrelieren (r = .55, p = 0). Insgesamt besteht die Skala aus zehn Items. Bis auf die zu kleinen Itemschwierigkeiten von einem Tamas-Item und einem Rajas-Item liegen die Kennwerte alle in den jeweiligen Sollbereichen.

Tabelle 9 Spirituelle Ausrichtung

Item-Nr.	Item	Faktorladungen			Item-schwierigkeit	Trennschärfe
		Tamas	Rajas	Sattva		
74.	Ich interessiere mich wenig für Spiritualität.	**.88**	.05	.04	.16	.78
24.	Ich weiß wenig über spirituelle Dinge.	**.81**	-.1	.06	.23	.66
75.	Ich glaube, dass etwas Transzendentales existiert. (U)	**.78**	.04	.06	.2	.7
62.	Im Kern sind alle Lebewesen spirituell. (U)	**.57**	.01	-.31	.21	.69
112.	Wissen, das zu materiellem Fortschritt verhilft, ist sehr wichtig.	-.08	**.78**	-.04	.33	.62
72.	Ich finde gesellschaftlichen materiellen Fortschritt wichtig.	.12	**.67**	.05	.32	.55
3.	Ich habe große Ambitionen für materielle Ziele, wie Geld und Ansehen.	0	**.63**	.04	.26	.54
6.	Ich glaube, dass Geld und ein gutes Ansehen glücklich machen.	-.04	**.6**	-.05	.19	.53
94.	Spirituell gesehen sind alle Lebewesen gleich.	-.09	0	**.75**	.56	.55
48.	Ich finde, dass das Leben der Tiere genauso wichtig ist wie das des Menschen.	.1	0	**.75**	.63	.55
	Cronbachs α	.86	.76	.71		

Items, die mit (U) gekennzeichnet sind, wurden umkodiert.

Skala zu sozialen Merkmalen

Tabelle 10 stellt die Skala *Sozialverhalten* dar, die aus 16 Items besteht. Die Items teilen sich eindeutig auf drei Guna-Faktoren auf und laden > .32 auf dem jeweiligen Faktor. Die Differenz zwischen den Beträgen von Haupt- und Fremdfaktorladungen sind auch hier > .15 und die Fremdfaktorladungen ≤ .32. Die Itemschwierigkeiten sind zwischen .2 und .8, bis auf eine Itemschwierigkeit von .13 für das Tamas-Item „Es ist mir manchmal egal, ob ich andere verletze." Die Trennschärfen der Items sind > .3 und die Cronbachs α Werte der Subskalen > .7.

Tabelle 10 Sozialverhalten

Item-Nr.	Item	Faktorladungen			Item-schwierigkeit	Trennschärfe
		Sattva	Tamas	Rajas		
91.	Ich bin anderen gegenüber tolerant.	**.73**	.08	-.02	.61	.59
22.	Im Umgang mit anderen bin ich respektvoll.	**.64**	.03	-.02	.66	.54
77.	Ich bin entgegenkommend.	**.62**	0	.01	.62	.53
19.	Ich bin anderen wohlwollend gesinnt.	**.6**	-.02	-.01	.63	.53
101.	Ich bin gütig.	**.59**	-.11	0	.56	.59
85.	Ich bemühe mich, andere sanft zu behandeln.	**.49**	-.17	.04	.59	.52
56.	Manchmal bin ich etwas garstig.	.07	**.85**	-.04	.28	.68
30.	Ich bin manchmal ganz schön grimmig.	-.04	**.76**	.02	.25	.7
87.	Manchmal bin ich unausstehlich.	.06	**.73**	.03	.31	.6
10.	Obwohl es mir nicht gefällt, streite ich mich öfters mit anderen.	-.09	**.55**	-.02	.2	.57
25.	Es ist mir manchmal egal, ob ich andere verletze.	-.19	**.38**	.05	.13	.49
58.	Mir fällt es schwer mich zu entschuldigen.	-.14	**.37**	.10	.21	.48
27.	Mir gefällt es, wenn mich andere bewundern.	.08	-.06	**.88**	.39	.66
67.	Ich möchte andere beeindrucken.	0	.01	**.77**	.3	.64
104.	Wenn ich jemandem etwas Gutes tue, möchte ich auch, dass andere davon erfahren.	-.08	.03	**.52**	.22	.50
15.	Manchmal brüste ich mich vor anderen mit meinen Erfolgen.	-.05	.11	**.46**	.22	.47
	Cronbachs α	.8	.82	.77		

Skala zu Merkmalen des Organismus und Gesundheitsverhaltens

Die Skala *Gesundheit und Gesundheitsverhalten* (Tabelle 11) besteht aus zehn Items. Die psychometrischen Kennwerte liegen alle in den Soll-Bereichen, bis auf zwei zu geringe Itemschwierigkeiten bei zwei Items der Tamas-Skala.

Tabelle 11 Gesundheit und Gesundheitsverhalten

Item-Nr.	Item	Faktorladungen			Item-schwierigkeit	Trennschärfe
		Tamas	Rajas	Sattva		
83.	Ich bin vital. (U)	**.94**	-.07	.01	.14	.75
71.	Ich habe wenig Energie.	**.7**	.17	.13	.26	.66
52.	Ich halte meinen Körper fit. (U)	**.66**	-.13	-.21	.17	.57
5.	Mein Körper fühlt sich meist schwer an.	**.48**	.32	.04	.28	.62
60.	Mein Körper fühlt sich meist unruhig an.	-.03	**.76**	-.03	.25	.62
4.	Mir fällt es schwer körperlich und/oder geistig zur Ruhe zu kommen und zu entspannen.	.05	**.76**	-.01	.3	.62
41.	Mir fällt es schwer, mir die nötige Zeit zu nehmen, um mich auszuruhen und/oder mich von einer Erkältung zu erholen.	-.05	**.63**	-.04	.3	.55
37.	Obst und Gemüse zählen zu meinen Lieblingsspeisen.	.06	-.01	**.76**	.59	.62
110.	Das wichtigste an Speisen ist für mich, dass sie gesund sind.	.05	-.02	**.73**	.49	.59

14. Ich habe einen gesunden Lebensstil.	-.2	-.05	**.6**	.53	.57
Cronbachs α	.82	.76	.76		

Items, die mit (U) gekennzeichnet sind, wurden umkodiert.

Insgesamt bestehen alle Tri-Guna-Skalen aus drei Faktoren, von denen jeder eindeutig einer der drei Gunas zugeordnet werden kann. Von 169 wurden die oben aufgeführten 120 Items im Fragebogen behalten. In Bezug auf die psychometrischen Kennwerte lässt sich zusammenfassen:

- *Faktorladungen:* Die Faktorladungen der Items sind alle > .32. Die Differenz zwischen den Beträgen von Haupt- und Fremdfaktorladungen sind > .15 und die Fremdfaktorladungen ≤ .32.
- *Itemschwierigkeiten:* Die Itemschwierigkeiten von 14 Items liegen unterhalb der unteren Grenze von .2. Die Itemschwierigkeiten der restlichen 106 Items liegen innerhalb des Sollbereichs von .2 bis .8.
- *Trennschärfen:* Die Trennschärfen aller Items sind > .3.
- *Interne Konsistenzen (Cronbachs α)*: Die Cronbachs α Werte der Skalen liegen über .7, außer bei drei Skalen, bei denen sie über .66 liegen (*Sattva Kognition*, *Tamas Kognition* und *Rajas Arbeitsstil*).

Im Folgenden sollen nun die Ergebnisse zur zweiten Forschungsfrage dargestellt werden: *wie valide messen die TGS die drei Gunas?* Zunächst werden die Subskalen-Interkorrelationen berichtet, gefolgt von den Korrelationen zu Merkmalen, die in Bezug auf die Gunas relevant sind (Außenkriterien).

Subskalen-Interkorrelationen

Die Korrelationen zwischen den Subskalen der TGS wurden untersucht, um zu prüfen, ob sie entsprechend der Guna-Modellannahmen miteinander zusammenhängen. Die Sattva-Subskalen müssten positiv untereinander und negativ mit den Rajas- und Tamas-Subskalen korrelieren. Die Rajas- und Tamas-Subskalen müssten außerdem positiv untereinander und miteinander korrelieren.

In Tabelle 12 werden die Ergebnisse der Subskalen-Interkorrelationen zusammengefasst dargestellt (siehe Anhang 3.8.2 für die ausführliche Tabelle). Da die TGS aus neun Skalen mit jeweils drei Subskalen bestehen, konnten bei der Untersuchung der Beziehungen aller Subskalen untereinander 351 Korrelationen betrachtet werden. Die Korrelationen zwischen den Subskalen waren entweder signifikant hypothesenkonform, signifikant hypothesenkonträr (beides bei einem p von mindestens < .05) oder nicht signifikant. Desweiteren lassen sich die Stärken der Korrelationen unterscheiden in $r < .3$, $.3 > r < .5$ und $r > .5$.

In Tabelle 12 ist die Anzahl der Art der Korrelationen der Subskalen-Vergleiche im Verhältnis zur Gesamtvergleichanzahl in Gruppen zusammengefasst angegeben. Da sich in den Feldern unterschiedliche Anzahlen an Gesamtvergleichen ergeben, sind zur besseren Vergleichbarkeit auch die Prozentwerte der jeweiligen Fälle angegeben. So sind zum Beispiel 17 von 36 (d.h. 47%) der Korrelationen zwischen den Sattva-Subskalen signifikant hypothesenkonform mit einem $r < .3$ (bei einem p von mindestens $< .05$).

Insgesamt sind 332 von 351 (94.6%) der Korrelationen signifikant hypothesenkonform. Bei den Vergleichen der Rajas- und Sattva-Subskalen fällt die einzig (d.h. 0.3%) signifikant hypothesenkonträre Subskalen-Interkorrelation auf (zwischen den Skalen *Sattva Arbeitsstil* und *Rajas Aktivitätsniveau* ($r = .13$, $p < .01$). Nicht signifikant sind 18 von 351 (d.h. 5.1%) der Korrelationen.

Die Zusammenhänge der Guna-Subskalen untereinander sind demzufolge in der überwiegenden Mehrheit hypothesenkonform und entsprechen den theoretischen Annahmen darüber, wie die Gunas untereinander zusammenhängen.

Tabelle 12 Subskalen-Interkorrelationen zusammengefasst

	Sattva	**Rajas**	**Tamas**
Sattva	17/36 (47%) hk $r < .3$ 13/36 (36%) hk $.3 > r < .5$ 5/36 (14%) hk $r > .5$ 1/36 (3%) n.s.		
Rajas	44/81 (54%) hk $r < .3$ 19/81 (23%) hk $.3 > r < .5$ 6/81 (7%) hk $r > .5$ 11/81 (14%) n.s. 1/81 (1%) h-konträr $r < .3$	11/36 (31%) hk $r < .3$ 13/36 (36%) hk $.3 > r < .5$ 12/36 (33%) hk $r > .5$	
Tamas	29/81 (36%) hk $r < .3$ 38/81 (47%) hk $.3 > r < .5$ 12/81 (1 %) hk $r > .5$ 2/81 (2%) n.s.	36/81 (44%) hk $r < .3$ 20/81 (25%) hk $.3 > r < .5$ 21/81 (26%) hk $r > .5$ 4/81 (5%) n.s.	7/36 (19%) hk $r < .3$ 10/36 (25%) hk $.3 > r < .5$ 19/36 (53%) hk $r > .5$

$N = 455$, hk: hypothesenkonform (p ist mindestens $< .05$), h-konträr: hypothesenkonträr (p ist mindestens $< .05$), n.s.: nicht signifikant

Korrelationen mit Außenkriterien

Desweiteren wurden die Zusammenhänge zwischen den Gunas und für die Gunas relevanten Merkmalen untersucht. Dabei sollten Skalen, die Aspekte von positivem Befinden erfassen (wie Lebenszufriedenheit, gute Laune und körperliches Wohlbefinden) positiv mit den Sattva-Subskalen korrelieren und negativ mit den Rajas- und Tamas-Subskalen. Skalen, die Unwohlsein und Stress erfassen sollten hingegen mit den Sattva-Subskalen negativ korrelieren und positiv mit den Rajas- und Tamas-Subskalen. Im Folgenden werden die Korrelationen zusammengefasst berichtet, die ausführlichen Tabellen sind in Anhang 3.8.3 zu finden.

Die Korrelationen zwischen den TGS und den Subskalen *Stimmungsniveau* und *Lebenszufriedenheit* der Habituellen Subjektiven Wohlbefindensskala (HSWBS) werden in Tabelle 13 pro Guna zusammengefasst dargestellt. In der letzten Zeile in Tabelle 13 wird die Anzahl an Skalen mit nicht signifikanten Korrelationen angegeben.

Die Stärke der Korrelationen der einzelnen Guna-Subskalen mit den Skalen *Stimmungsniveau* und *Lebenszufriedenheit* variiert stark von schwachen bis starken Korrelationen, allerdings sind die Richtungen aller Korrelationen wie sie entsprechend der Modellannahmen sein müssten. Hypothesenkonform korrelieren die Sattva-Subskalen positiv und die Rajas- und Tamas-Subskalen negativ mit einem (positiven) *Stimmungsniveau* und *Lebenszufriedenheit*. Eine Rajas-Subskala (*Rajas Sozialverhalten*) korreliert nicht signifikant mit *Lebenszufriedenheit*.

Tabelle 13 Korrelationen TGS und der Habituellen Subjektiven Wohlbefindensskala (HSWBS)

	Stimmungsniveau	**Lebenszufriedenheit**
Sattva	.12** bis .86**	.1* bis .71**
Rajas	-.15** bis -.6**	-.13** bis -.51**
Tamas	-.2** bis -.82**	-.17** bis -.74**
Anzahl n. s. Subskalen		1

N = 455, ** = $p < .01$, * = $p < .05$

Die Zusammenhänge zwischen den Befindlichkeitsskalen zur Messung der Grundgestimmtheit und den TGS werden in Tabelle 14 berichtet. Die Sattva-Skalen korrelieren positiv mit *guter Laune* (bis auf *Sattva Spirituelle Ausrichtung*), *Aktiviertheit* (bis auf *Sattva Spirituelle Ausrichtung*) und *Ruhe* und negativ mit *Erregtheit* und *Deprimiertheit* (wieder bis auf *Sattva Spirituelle Ausrichtung*), *Energielosigkeit* und *Ärger*. Die Rajas- und Tamas-Skalen korrelieren negativ mit *guter Laune*, *Ruhe* und *Aktiviertheit*. Die Rajas-Skalen korrelieren positiv mit *Erregtheit*. Die Tamas-Skalen korrelieren positiv mit *Energielosigkeit* und *Deprimiertheit*. Damit sind die Korrelationen zwischen den TGS und Wohlbefinden gemessen mit den BFS hypothesenkonform. Auch hier gibt es große Unterschiede in der Stärke der Zusammenhänge.

Tabelle 14 Korrelationen TGS und den Befindlichkeitsskalen zur Messung der Grundgestimmtheit (BFS)

	gute Laune	**Ruhe**	**Aktiviertheit**
Sattva	.19** bis .74**	.1* bis .67**	.25** bis .6**
Rajas	-.11* bis -.6**	-.13** bis -.65**	-.12** bis -.47**
Tamas	-.16** bis -.72**	-.2** bis -.65**	-.17** bis -.7**
Anzahl n. s. Subskalen	1		3

	Deprimiertheit	**Erregtheit**	**Energielosigkeit**	**Ärger**
Sattva	-.18** bis -.63**	-.13* bis -.5**	-.19** bis -.53**	-.17** bis -.59**
Rajas	.13** bis .63**	.19** bis .77**	-.13** bis -.53**	.23** bis .67**
Tamas	.14** bis .8**	.17** bis .6**	.14** bis .76**	.18** bis .65**
Anzahl n. s. Subskalen	1		2	

N = 455, ** = *p* < .01, * = *p* < .05

Sattva und Stress sollten negativ zusammenhängen, während Rajas und Tamas positiv mit Stress korrelieren sollten. Tabelle 15 zeigt die Zusammenhänge zwischen den TGS und Stresserleben. Die Stärke der Korrelationen der verschiedenen Subskalen mit Stress variiert, doch die Sattva-Skalen korrelieren negativ und die Rajas- und Tamas-Skalen positiv mit Stresserleben – sowohl in Bezug auf die Gesamtskala, als auch in Bezug auf die Subskalen (obwohl sich bei der Subskala *Freude* die Zusammenhänge umkehren, da sie umgepolt wird, bevor ihre Werte der Gesamtskala hinzugefügt werden). Nicht signifikante Korrelationen bestehen zwischen der PSQ Skala *Anforderungen* und den TGS Skalen *Sattva Arbeitsstil*, *Sattva Spirituelle Ausrichtung* und *Tamas Spirituelle Ausrichtung*.

Tabelle 15 Korrelationen TGS und Stresserleben (PSQ)

	Stress (Gesamt)	**Anspannung**	**Anforderungen**	**Freude**	**Sorgen**
Sattva	-.14** bis -.76**	-.16** bis -.62**	-.13** bis -.49**	.13** bis .78**	-.16** bis -.61**
Rajas	.19** bis .73**	.17** bis .78**	.16** bis .6**	-.18** bis -.65**	.18** bis .69**
Tamas	.23** bis .77**	.21** bis .69**	.12* bis .43**	-.22** bis -.74**	.21** bis .75**
Anzahl n. s. Subskalen			3		

N = 455, ** = *p* < .01, * = *p* < .05

Die Sattva-Skalen korrelieren positiv mit körperlichem Wohlbefinden (Tabelle 16), während die Rajas- und Tamas-Skalen negativ mit körperlichem Wohlbefinden korrelieren. Damit entsprechen auch diese Zusammenhänge den Hypothesen. Drei TGS korrelieren nicht mit drei der FEW 16 Skalen (*Sattva Spirituelle Ausrichtung* und *Belastbarkeit*, *Rajas Motive* und *Vitalität* und *Rajas Motive* und *Genussfähigkeit*).

Tabelle 16 Korrelationen TGS und körperliches Wohlbefinden (FEW 16)

	körperliches Wohlbefinden (Gesamt)	**Belastbarkeit**	**Vitalität**	**Innere Ruhe**	**Genussfähigkeit**
Sattva	.13** bis .71**	.21** bis .49**	.14** bis .61**	.1* bis .73**	.17** bis .64**
Rajas	-.14** bis -.72**	-.12** bis -.5**	-.12** bis -.64**	-.19** bis -.8**	-.14** bis -.63**
Tamas	-.22** bis -.76**	-.12** bis -.66**	-.18** bis -.68**	-.18** bis -.73**	-.26** bis -.68**
Anzahl n. s. Subskalen		1	1		1

N = 455, ** = *p* < .01, * = *p* < .05

Bei den Außenkriterien Arbeitsengagement, Mindwandering und Daydreaming fallen die meisten nicht signifikanten Korrelationen auf (Tabelle 17). Die signifikanten Korrelationen sind alle hypothesenkonform: die Sattva-Skalen korrelieren positiv mit Arbeitsengagement und negativ mit Mindwandering und Daydreaming und bei den Rajas- und Tamas-Skalen ist es genau umgekehrt.

Tabelle 17 Korrelationen TGS, Arbeitsengagement (UWES9), Mindwandering und Daydreaming

	Arbeitsengagement	**Mindwandering**	**Daydreaming**
Sattva	.1* bis .58**	-.14** bis -.39**	-.1* bis -.26**
Rajas	-.11* bis -.42**	.12* bis .56**	.12** bis .29**
Tamas	-.21** bis -.53**	.14** bis .59**	.2** bis .35**
Anzahl n. s. Subskalen	4	5	9

N = 455, ** = *p* < .01, * = *p* < .05

In Hinblick auf die Big Five korrelieren die Sattva-Skalen wie erwartet positiv und die Rajas und Tamas-Skalen negativ mit Verträglichkeit, Gewissenhaftigkeit, emotionaler Stabilität und Offenheit. Auch für Extraversion, das Big Five Merkmal, das in frühreren Studien widersprüchliche Zusammenhänge zu den Gunas aufwies, zeigen die Korrelationen eindeutige Richtungen – Sattva korreliert positiv mit Extraversion, während mit Rajas und Tamas negative Korrelationen bestehen. Zehn TGS Subskalen haben keinen signifikanten Zusammenhang zu einer oder mehreren der Big Five Skalen.

Tabelle 18 Korrelationen TGS und den Big Five (TIPI-G)

	Extraversion	**Verträglichkeit**	**Gewissenhaftigkeit**	**emotionale Stabilität**	**Offenheit**
Sattva	.15** bis .47**	.12* bis .6**	.1* bis .58**	.22** bis .68**	.16** bis .48**
Rajas	-.2** bis -.22**	-.11* bis -.44**	-.13** bis -.41**	-.15** bis -.76**	-.1* bis -.34**
Tamas	-.1* bis -.42**	-.19** bis -.6**	-.28** bis -.67**	-.19** bis -.74**	-.26** bis -.4**
Anzahl n. s. Subskalen	6		3	1	

N = 455, ** = *p* < .01, * = *p* < .05

3.6.8 Diskussion

In Studie 2 wurden zunächst 56 neue Items aus dem Guna-Modell abgeleitet und die 11 Items, die im Sinne der Itemschwierigkeit zu leicht oder schwer waren, umformuliert. Ziel war die psychometrischen Eigenschaften der Tri-Guna-Skalen mit den neuen und umformulierten Items zu verbessern. Die TGS wurden von einer großen Stichprobe ausgefüllt und anschließend explorativ faktorenanalytisch und item- und skalenanalytisch untersucht. Zusätzlich füllten die Studienteilnehmer/innen weitere Fragebögen aus, welche für die Gunas relevante Merkmale erfassen. Über diese Außenkriterien wurde die Validität der TGS untersucht.

Die überarbeiteten Skalen weisen vor allem in Bezug auf die Faktorenstruktur, Trennschärfen der Items und interne Konsistenz der Skalen verbesserte psychometrische Eigenschaften auf. Die Faktorladungen der Items sind > .32, die Unterschiede zwischen Haupt- und Fremdfaktorladungen sind ≥ .15 und die Fremdfaktorladungen ≤ .32. Die Trennschärfen aller Items sind > .3 und die interne Konsistenz liegt bei 24 der 27 Subskalen oberhalb des Sollwerts von .7.

Von den 13 Items mit problematischer Itemschwierigkeit aus der ersten Fragebogenversion blieben neun in der revidierten Fragebogenfassung enthalten. Nur bei zwei dieser Items fällt die Itemschwierigkeit immer noch außerhalb des Bereiches von .2 bis .8. Nachteilhaft ist, dass nun allerdings die Itemschwierigkeiten von 14 der neu formulierten Items für verschiedene Rajas- und Tamas-Skalen unterhalb von .2 fallen.

In Bezug auf die Validität können folgende Feststellungen festgehalten werden: Dadurch, dass die Items einen umfassenden Ausschnitt an Guna-Indikatoren abdecken, die über eine Selbsteinschätzung im Itemformat erfasst werden können, kann die Inhaltsvalidität als gegeben bewertet werden.

Die Korrelationen der Skalen untereinander entsprechen zu 94.6% den Erwartungen in Bezug auf das theoretische Modell. Einige der Skalen hatten keine signifikante Korrelationen zueinander, zwei Skalen wiesen eine hypothesenkonträre schwache positive Korrelation auf (*Sattva Arbeitsstil* und *Rajas Aktivitätsniveau* (r = .13, p < .01)). Diese Korrelation weist darauf hin, dass Menschen, die sorgfältig und vorausschauend (*Sattva Arbeitsstil*) arbeiten, häufig auch angeben sich zu überanstrengen (*Rajas Aktivitätsniveau*). Im Hinblick auf die geringe Stärke der Korrelation stellt sie keine schwerwiegende Einschränkung der Validität dar.

Die Hypothesen, welche aufgestellt wurden, um die TGS in Bezug auf Außenkriterien zu validieren, konnten alle belegt werden. Die TGS zur Erfassung von Sattva korrelieren positiv

mit Skalen, die Wohlbefinden erfassen, und negativ mit Skalen, die Stress erheben, während diese Zusammenhänge umgekehrt sind für die Rajas- und Tamas-Subskalen. Auffällig ist, dass häufig die *Emotionen* Skala bei allen drei Gunas die höchsten Korrelationen zu den Außenkriterien aufweist, während die geringsten Korrelationen häufig mit den Skalen *Spirituelle Ausrichtung* und *Motivation* bestehen. In Bezug auf Variablen des subjektiven Wohlbefindens scheint die *Emotionen* Tri-Guna-Skala die größte Aussagekraft zu haben.

Insgesamt ergibt sich in Bezug auf die Konstruktvalidität ein sehr gutes Bild: die Skalen bestehen alle aus drei Faktoren, von denen sich jeder einer der drei Gunas zuordnen lässt. Untereinander korrelieren die Skalen hypothesenkonform und relevante Außenkriterien stehen in hypothesenkonformen Zusammenhängen mit den TGS.

Obwohl die TGS für die Forschung als ausreichend reliabel und valide betrachtet werden können, gibt es verbesserungswürde Aspekte. Dies betrifft zum einen die drei Skalen, deren internen Konsistenzen unter .7 liegen (*Sattva Kognition*, *Tamas Kognition* und *Rajas Arbeitsstil*) und die Items mit Itemschwierigkeiten unter .2. Die internen Konsistenzen dieser drei Skalen sollten erhöht werden, z.B. in dem die Skalen durch neue Items ergänzt oder Items der Skalen, die weniger zur inneren Konsistenz beitragen, ersetzt werden. Die Itemschwierigkeiten der genannten Items sollten gesenkt werden, da sonst die Gefahr besteht, dass diese Items nicht genügend zwischen Personen mit hoher bzw. niedriger Merkmalsausprägung differenzieren. Allerdings muss auch in Erwägung gezogen werden, dass die niedrigen Itemschwierigkeiten einiger Items der Rajas- und Tamas-Skalen durch die Merkmale der Stichprobe zustande gekommen sein könnten, da die Stichprobe aus freiwilligen Versuchspersonen besteht, welche vermutlich höhere Sattva-Werte und geringere Rajas- und Tamas-Werte als die Gesamtbevölkerung haben. In anderen Stichproben könnten die Itemschwierigkeiten dieser Items höher sein. Schließlich fällt auf, dass zwei Subskalen aus nur zwei Items bestehen – diese Subskalen sollten verlängert werden (*Sattva Volition* und *Sattva Spirituelle Ausrichtung*), um die Sicherheit zu erhöhen, dass diese Faktoren sich auch in anderen Stichproben eindeutig zeigen (Worthington & Whittaker, 2006).

3.7 Abschließende Diskussion und Ausblick

Mit der Entwicklung der Tri-Guna-Skalen ist die empirische Erforschung des Tri-Guna-Modells einen wichtigen Schritt voran gegangen. Durch die Mängel bisheriger Diagnoseinstrumente war ein objektives, reliables und valides Erfassen der Gunas unmöglich. Im Vergleich zu diesen Instrumenten haben die TGS die Guna-Diagnostik wesentlich verbessert. Zum einen wurden die TGS auf der Grundlage eines ausreichend definiertem theoretischen Modell entwickelt, welches sie erschöpfend erfassen, wodurch deren

Inhaltsvalidität garantiert werden konnte. Durch die Form eines standardisierten Fragebogens ist sowohl die Durchführung und Auswertung der Skalen eindeutig vorgeschrieben und vom Testanwender unabhängig, wodurch die Objektivität der Skalen gegeben ist. Zum anderen wurden die Faktorenstruktur der TGS, die Kennwerte der Items und Skalen sowie die Zusammenhänge der Skalen zu relevanten Außenkriterien empirisch analysiert. Bis auf die Ausnahmen der Itemschwierigkeiten von 14 Items und der internen Konsistenzen von drei Subskalen werden die TGS den Anforderungen an Item- und Skalenanalytische Kennwerte und Testgütekriterien gerecht. Ein weiterer wesentlicher Unterschied zu den bisher vorhandenen Fragebögen ist, dass die TGS auch im westlichen Kulturkreis verstanden und dadurch angewandt werden können.

Die Entwicklung der TGS begann mit der Zielvorstellung, eine Skala zur Erfassung der Gunas zu entwerfen, deren Items auf drei Faktoren laden. Nach der ersten Studie wurde deutlich, dass das Guna-Modell zu viele Verhaltensaspekte berührt, um in einer einzigen Skala erfasst zu werden. Diese zwei Hauptdimensionen der Items (Verhaltensaspekt und Guna) vermischten sich, so dass keine klare Drei-Faktorenstruktur in Bezug auf die Gunas erkennbar war. In Bezug auf die verschiedenen Kategorien der Verhaltensgleichung auf mehrere Skalen aufgeteilt, war es jedoch möglich eine klare Faktorenstruktur für die Guna-Skalen zu erreichen.

Dass Items, welche auf dem Niveau einzelner Kategorien und Subkategorien der Verhaltensgleichung die Gunas messen, drei Faktoren bilden, welche den jeweiligen Gunas entsprechen, ist ein Beleg für die theoretische Konzipierung der Gunas als drei unterschiedliche Dimensionen – im Gegensatz zur Operationalisierung der Gunas als eine Dimension mit zwei Gunas an den Polen und eine in der Mitte mancher Fragebögen-Autoren (Frawley, 1997; Kapur et al., 1997), welche auch der Darstellung der Texte der indischen Psychologie widerspricht (Ganganatha, 1896; Murthy & Kumar, 2007).

Die Korrelationen der Skalen untereinander stehen ebenfalls im Einklang mit dem theoretischen Modell, nachdem die Gunas in Abhängigkeit von einander wirken (Ganganatha, 1896). Wie es sich auch in vorherigen Studien gezeigt hat, korreliert Sattva dabei negativ mit Rajas und Tamas, und Rajas und Tamas korrelieren positiv (Khemka et al., 2011; Krishna Rao & Harigopal, 1979; Marutham et al., 1998; Mohan & Sandhu, 1986; Wolf, 1998).

Insgesamt können die TGS als ein objektives, reliables und valides Verfahren zur Erfassung der Gunas bewertet werden.

Einschränkungen

Da in Studie 1 deutlich wurde, dass erneut Items dem Fragebogen hinzugefügt werden mussten, konnte in Studie 2 noch nicht zu einer konfirmatorischen Faktorenanalyse übergegangen werden. Um die faktorielle Validität der TGS noch sicherer zu demonstrieren, wäre solch ein hypothesenprüfendes Vorgehen bei der Analyse der Faktorensturktur der TGS wünschenswert. Eine CFA wäre ein möglicher Ansatzpunkt für weitere Studien.

Um die Stichprobe in Studie 2 zu vergrößern, wurden der Zielgruppe „Yoga-Interessierte“ noch Studenten zweier Universitäten hinzugefügt. Dies hat dazu geführt, dass die Stichprobe in Studie 2 etwas heterogener ist, als die von Studie 1. Da es sich hierbei allerdings um nur 14% von 455 Studienteilnehmenden handelt, ist dieser Unterschied nicht zu drastisch.

Einschränkungen der TGS bestehen in den bereits diskutierten problematischen Itemschwierigkeiten von 14 Items und den internen Konsistenzen von drei der Subskalen.

Anwendbarkeit

Die TGS sind in der aktuellen Fassung als Fragebogen für die weitere Erforschung der Gunas geeignet. Dabei muss beachtet werden, dass die Studien zur empirischen Untersuchung der Skalen auf freiwillige Teilnehmer/innen angewiesen waren. Um Freiwillige zu finden, die sich für dieses Thema interessieren würden, wurde deshalb zielgruppenspezifisch im Kreis von „Yoga-Interessierten“ für die Studie geworben. Deshalb muss beachtet werden, dass die Items und Skalen in anderen Stichproben andere psychometrische Eigenschaften aufweisen könnten.

Bei der Anwendung der TGS muss außerdem in Betracht gezogen werden, dass sie wie alle Messverfahren, die durch eine Selbsteinschätzung stattfinden, nur bei einer Bereitschaft zur Ehrlichkeit sinnvoll eingesetzt werden können. Dies gilt insbesondere, da die Rajas- und vor allem Tamas-Skalen häufig sozial unerwünschte Eigenschaften messen (wie zum Beispiel die Tamas-Items „Ich gehe oft ziellosen und nebensächlichen Tätigkeiten nach.“ und „Es ist mir manchmal egal, ob ich andere verletze.“). In Forschungskontexten, in denen Studienteilnehmer/innen persönliche Konsequenzen aus dem Ausfüllen des Fragebogens erwarten, würden die Antworten mit Sicherheit verzerrt sein.

Beim Einsatz der aktuellen Version der TGS sollten die Skalen *Sattva Kognition*, *Tamas Kognition* und *Rajas Arbeitsstil* mit besonderer Vorsicht interpretiert werden, da deren Reliabilitätswerte unterhalb von .7 liegen.

Weiterhin liegen für die TGS (noch) keine Normen vor, so dass ein Einsatz der TGS außerhalb der Forschung wenig sinnvoll erscheint – es sei denn Anwender sind an

Veränderungen von Individuen interessiert und möchten spätere Messwerte der Personen mit deren frühreren Messwerten vergleichen.

Hinweise für die Aufklärung von Widersprüchen im Guna-Modell

Obwohl es nicht das Hauptanliegen dieser Studien war empirische Widersprüche in Bezug auf inhaltliche Aspekte des Guna-Modelles aufzuklären, liefern die Ergebnisse doch einige interessante Hinweise für die zukünftige Forschung. Zwei widersprüchliche Ergebnisse liegen bisher für die Beziehungen von Sattva- und Raja-Guna zur Persönlichkeitseigenschaft Extraversion vor (Hopkins, 2003, Sitamma, 2005). In Bezug auf Sattva stimmen die Ergebnisse dieser Studie mit den Befunden von Hopkins (2003) überein, dass Sattva positiv mit Extraversion korreliert. Die Höhe der Korrelation seiner Studie (r = .23, p < .01) liegt ungefähr in der Mitte der Spannbreite der Korrelationen der TGS mit Extraversion. Dies deutet auf eine höhere Differenziertheit der TGS gegenüber bisherigen Skalen, die einen einzigen Skalenwert pro Guna erzielten. Für Rajas ist das Ergebnis nicht eindeutig – fünf der neun Skalen korrelieren gar nicht mit Extraversion und vier geringfügig negativ. Das deutet in die Richtung von Hopkins' (2003) Befund (r = -.24, p < .01), zeigt aber, dass nicht alle Aspekte von Rajas auf die gleiche Weise mit Extraversion in Beziehung stehen.

Ein weiteres widersprüchliches Ergebnis ergab eine Studie von Daftuar and Anjuli (1997), in welcher Stress im Gegensatz zu den Erwartungen weder negativ mit Sattva noch positiv mit Rajas korrelierte. Hopkins (2003) fand im Gegensatz dazu eine starke negative Korrelation zwischen Sattva und der Neurotizismusfacette Vulnerabilität (r = -.74, p < .001), während Rajas positiv mit dieser Facette korrelierte (r = .52, p < .001). Sowohl in Hinblick auf die Ergebnisse der Korrelationen der TGS mit Stresserleben (gemessen mit dem PSQ) als auch die Korrelationen der Gunas mit der Big Five Facette emotionale Stabilität schließen sich die Ergebnisse dieser Studie Hopkins' Befunden an.

Empfehlungen für die Weiterentwicklung der Skalen

Die TGS könnten an einigen Stellen verbessert werden. Die internen Konsistenzen der Skalen *Sattva Kognition*, *Tamas Kognition* und *Rajas Arbeitsstil* und die Itemschwierigkeiten der Items mit zu niedrigen Werten sollten erhöht werden. Die Skalen *Sattva Volition* und *Sattva Spirituelle Ausrichtung* könnten verlängert werden, da sie aus nur zwei Items bestehen. Diese Schritte würden erfordern, dass den betreffenden Skalen nochmals Items hinzugefügt werden und sie dann nochmals per explorativer Faktorenanalyse untersucht werden.

Wenn diese Mängel behoben sind, sollten die TGS mit einer konfirmatorischen Faktorenanalyse untersucht werden, denn nur die CFA ist tatsächlich hypothesentestend und

kann prüfen, inwieweit das theoretische Modell in den Daten repliziert wird. Danach könnten Normen für die Skalen entwickelt werden, damit die Werte von Individuen mit den Werten ihrer Referenzgruppe aus der Gesamtbevölkerung verglichen werden können. Schließlich könnten die Skalen ins Englische übertragen werden, damit sie für Forschungsfragen weltweit zur Verfügung stehen können.

Schlussfolgerung

Die TGS bilden eine Grundlage für die weitere Erforschung des Guna-Modelles, welche ohne eine objektive, reliable und valide Diagnostik der Gunas nicht vorankommen kann. Unzulängliche Guna-Inventare werden immer die Frage offen lassen, ob empirische Widersprüche aufgrund der Inventare oder Mängel im Modell zustande kommen. Die TGS verringern durch ihre Aussagekraft die Notwendigkeit dieser Frage.

Die eindeutigen und zum Teil sehr hohen Beziehungen der Gunas zu psychischem und körperlichem subjektivem Wohlbefinden und Stresserleben verdeutlichen sowohl die Relevanz dieses Modelles für die weitere Erforschung der Faktoren, die zu Wohlbefinden führen, als auch die Relevanz eines brauchbaren Instrumentes, das die Gunas misst.

3.8 Anhänge

3.8.1 Literatur

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3.8.2 Subskalen-Interkorrelationen

Tabelle 19 Subskalen-Interkorrelationen

	Sko	Sar	Sem	Smo	Ssp	Svo	Sak	Sso	Sge	Rko	Rar	Rem	Rmo	Rsp	Rvo	Rak	Rso	Rge	Tko	Tar	Tem	Tmo	Tsp	Tvo	Tak	Tso
Sar	.24**																									
Sem	.67**	.2**																								
Smo	.36**	.1*	.4**																							
Ssp	.24**	.06	.21**	.44**																						
Svo	.39**	.34**	.43**	.18**	.1*																					
Sak	.55**	.25**	.52**	.23**	.15**	.3**																				
Sso	.5**	.33**	.56**	.3**	.21**	.21**	.36**																			
Sge	.33**	.26**	.38**	.3**	.38**	.22**	.3**	.26**																		
Rko	-.48**	-.16**	-.51**	-.23**	-.19**	-.29**	-.49**	-.29**	-.32**																	
Rar	-.32**	-.02	-.33**	-.21**	-.2**	-.1*	-.32**	-.19**	-.16**	.57**																
Rem	-.57**	-.18**	-.6**	-.23**	-.12*	-.32**	-.52**	-.41**	-.28**	.81**	.61**															
Rmo	-.15**	.02	-.12*	-.2**	-.16**	-.03	-.06	-.13**	-.13**	.21**	.37**	.24**														
Rsp	-.18**	0	-.16**	-.27**	-.27**	-.08	-.06	-.15**	-.22**	.27**	.42**	.26**	.71**													
Rvo	-.47**	-.33**	-.45**	-.27**	-.28**	-.29**	-.3**	-.46**	-.32**	.53**	.51**	.55**	.45**	.45**												
Rak	-.17**	.13**	-.15**	-.07	-.08	-.01	-.41**	-.06	-.01	.44**	.46**	.44**	.14**	.19**	.19**											
Rso	-.23**	-.12*	-.21**	-.19**	-.31**	-.16**	-.15**	-.2**	-.24**	.36**	.48**	.35**	.41**	.4**	.6**	.16**										
Rge	-.5**	-.12*	-.52**	-.26**	-.18**	-.27**	-.61**	-.32**	-.32**	.73**	.52**	.75**	.15**	.21**	.43**	.58**	.29**									
Tko	-.39**	-.35**	-.32**	-.37**	-.16**	-.31**	-.27**	-.39**	-.24**	.27**	.22**	.33**	.1*	.19**	.34**	.11*	.16**	.3**								
Tar	-.44**	-.46**	-.48**	-.19**	-.2**	-.39**	-.37**	-.29**	-.36**	.5**	.33**	.5**	.11**	.14**	.53**	.03**	.33**	.4**	.34**							

	Sko	Sar	Sem	Smo	Ssp	Svo	Sak	Sso	Sge	Rko	Rar	Rem	Rmo	Rsp	Rvo	Rak	Rso	Rge	Tko	Tar	Tem	Tmo	Tsp	Tvo	Tak	Tso
Tem	-.62**	-.22**	-.76**	-.21**	-.08	-.38**	-.48**	-.37**	-.31**	.67**	.43**	.72**	.16**	.18**	.5**	.25**	.25**	.59**	.32**	.57**						
Tmo	-.55**	-.26**	-.59**	-.18**	-.11*	-.44**	-.41**	-.29**	-.27**	.65**	.48**	.66**	.23**	.29**	.58**	.25**	.35**	.52**	.32**	.58**	.74**					
Tsp	-.28**	-.03	-.31**	-.8**	-.52**	-.16**	-.18**	-.23**	-.29**	.23**	.22**	.19**	.15**	.26**	.24**	.09	.19**	.21**	.35**	.16**	.16**	.15**				
Tvo	-.49**	-.48**	-.54**	-.2**	-.11*	-.5**	-.4**	-.35**	-.37**	.49**	.34**	.56**	.09	.13**	.5**	0	.29**	.43**	.38**	.82**	.63**	.64**	.17**			
Tak	-.5**	-.35**	-.55**	-.26**	-.16**	-.39**	-.41**	-.3**	-.39**	.58**	.42**	.61**	.16**	.19**	.51**	.11*	.32**	.5**	.36**	.83**	.67**	.62**	.21**	.82**		
Tso	-.51**	-.26**	-.58**	-.29**	-.21**	-.22**	-.37**	-.59**	-.36**	.51**	.45**	.65**	.23**	.27**	.56**	.18**	.38**	.45**	.37**	.54**	.56**	.48**	.24**	.54**	.57**	
Tge	-.5**	-.27**	-.61**	-.21**	-.1*	-.38**	-.47**	-.38**	-.44**	.51**	.32**	.57**	.1*	.14**	.43**	.1*	.14**	.54**	.35**	.63**	.65**	.55**	.17**	.72**	.77**	.47**

$N = 455$, ** = $p < .01$, * = $p < .05$, S: Sattva, R:Rajas, T: Tamas, ko = Kognition, ar = Arbeitsstil, em = emotionales Befinden, mo = Motive, sp = spirituelle Ausrichtung, vo = Volition, ak = Aktivitätsniveau, so = Sozialverhalten, ge = Gesundheit & Gesundheitsverhalten

3.8.3 Korrelationen mit Außenkriterien

Tabelle 20 Korrelationen der Sattva-Subskalen mit Außenkriterien

	Sko	Sar	Sem	Smo	Ssp	Svo	Sak	Sso	Sge
Stimmungsniveau (HSWBS)	.62**	.15**	.86**	.29**	.12**	.35**	.44**	.45**	.32**
Lebenszufriedenheit (HSWBS)	.6**	.19**	.71**	.24**	.1*	.36**	.45**	.38**	.26**
Gute Laune (BFS)	.57**	.19**	.74**	.24**	.04	.36**	.48**	.44**	.27**
Ruhe (BFS)	.58**	.17**	.67**	.26**	.1*	.35**	.57**	.42**	.28**
Aktiviertheit (BFS)	.5**	.29**	.6**	.25**	.06	.41**	.43**	.34**	.34**
Deprimiertheit (BFS)	-.51**	-.21**	-.63**	-.18**	-.09	-.34**	-.44**	-.32**	-.25**
Erregtheit (BFS)	-.49**	-.13**	-.5**	-.2**	-.15**	-.27**	-.48**	-.31**	-.25**
Energielosigkeit (BFS)	-.46**	-.31**	-.53**	-.19**	-.06	-.41**	-.37**	-.31**	-.29**
Ärger (BFS)	-.53**	-.18**	-.59**	-.21**	-.17**	-.28**	-.43**	-.47**	-.3**
Stress (gesamt, PSQ)	-.64**	-.24**	-.76**	-.3**	-.14**	-.39**	-.6**	-.44**	-.34**
Anspannung (PSQ)	-.53**	-.21**	-.62**	-.28**	-.16**	-.32**	-.62**	-.36**	-.33**
Anforderungen (PSQ)	-.33**	-.05	-.33**	-.13**	-.08	-.14**	-.49**	-.21**	-.17**
Freude (PSQ)	.64**	.26**	.78**	.31**	.13**	.41**	.55**	.46**	.33**
Sorgen (PSQ)	-.57**	-.18**	-.61**	-.23**	-.16**	-.32**	-.49**	-.28**	-.29**
Körperliches Wohlbefinden (gesamt, FEW 16)	.63**	.23**	.71**	.29**	.13**	.39**	.63**	.41**	.4**
Belastbarkeit (FEW 16)	.41**	.21**	.49**	.21**	.04	.33**	.43**	.29**	.29**
Vitalität (FEW 16)	.53**	.17**	.61**	.24**	.14**	.31**	.52**	.31**	.31**
Innere Ruhe (FEW 16)	.65**	.19**	.73**	.26**	.1*	.36**	.58**	.43**	.3**
Genussfähigkeit (FEW 16)	.58**	.25**	.62**	.3**	.17**	.37**	.64**	.37**	.5**
Arbeitsengagement (gesamt, UWES9)	.49**	.31**	.58**	.25**	.1*	.38**	.36**	.37**	.28**
Elan (UWES9)	.52**	.28**	.59**	.31**	.13**	.38**	.4**	.37**	.28**
Beteiligung (UWES9)	.45**	.29**	.53**	.21**	.08	.35**	.33**	.34**	.27**
Vertieftsein (UWES9)	.41**	.3**	.51**	.2**	.08	.34**	.28**	.34**	.25**
Mindwandering	-.22**	-.26**	-.23**	-.02	-.01	-.2**	-.19**	-.17**	-.12*
Daydreaming	-.15**	-.26**	-.11*	.06	-.01	-.12*	-.1*	-.06	-.04
Extraversion (TIPI)	.37**	.15**	.47**	.16**	.06	.33**	.21**	.2**	.17**
Verträglichkeit (TIPI)	.41**	.15**	.48**	.24**	.21**	.12*	.34**	.6**	.27**
Gewissenhaftigkeit (TIPI)	.39**	.58**	.37**	.13**	.1*	.43**	.38**	.28**	.28**
Emotionale Stabilität (TIPI)	.64**	.22**	.68**	.3**	.07	.39**	.49**	.41**	.31**
Offenheit (TIPI)	.48**	.16**	.42**	.31**	.19**	.38**	.32**	.32**	.32**

N = 455, ** = $p < .01$, * = $p < .05$, S: Sattva, ko = Kognition, ar = Arbeitsstil, em = Emotionen, mo = Motive, sp = Spirituelle Ausrichtung, vo = Volition, ak = Aktivitätsniveau, so = Sozialverhalten, ge = Gesundheit & Gesundheitsverhalten

Tabelle 21 Korrelationen der Rajas-Subskalen mit Außenkriterien

	Rko	Rar	Rem	Rmo	Rsp	Rvo	Rak	Rso	Rge
Stimmungsniveau (HSWBS)	-.51**	-.34**	-.6**	-.15**	-.15**	-.44**	-.17**	-.18**	-.5**
Lebenszufriedenheit (HSWBS)	-.45**	-.26**	-.51**	-.15**	-.16**	-.35**	-.13**	-.07	-.43**
Gute Laune (BFS)	-.49**	-.31**	-.6**	-.11*	-.15**	-.39**	-.19**	-.14**	-.53**
Ruhe (BFS)	-.56**	-.38**	-.65**	-.13**	-.19**	-.39**	-.29**	-.19**	-.62**
Aktiviertheit (BFS)	-.39**	-.19**	-.47**	-.06	-.14**	-.33**	-.01	-.12**	-.45**
Deprimiertheit (BFS)	.56**	.37**	.63**	.13**	.21**	.41**	.22**	.23**	.52**
Erregtheit (BFS)	.74**	.54**	.77**	.19**	.24**	.45**	.48**	.3**	.69**
Energielosigkeit (BFS)	.47**	.34**	.53**	.13**	.2**	.43**	.08	.22**	.45**
Ärger (BFS)	.55**	.41**	.67**	.22**	.27**	.47**	.26**	.29**	.51**
Stress (gesamt, PSQ)	.65**	.45**	.73**	.19**	.22**	.47**	.31**	.23**	.67**
Anspannung (PSQ)	.72**	.5**	.77**	.17**	.22**	.45**	.46**	.25**	.78**
Anforderungen (PSQ)	.51**	.38**	.54**	.17**	.16**	.29**	.53**	.18**	.6**
Freude (PSQ)	-.56**	-.38**	-.65**	-.18**	-.19**	-.44**	-.19**	-.19**	-.57**
Sorgen (PSQ)	.64**	.46**	.69**	.18**	.24**	.45**	.31**	.23**	.6**
Körperliches Wohlbefinden (gesamt, FEW 16)	-.65**	-.43**	-.72**	-.14**	-.17**	-.45**	-.31**	-.21**	-.71**
Belastbarkeit (FEW 16)	-.48**	-.27**	-.5**	-.12**	-.13**	-.32**	-.16**	-.14**	-.49**
Vitalität (FEW 16)	-.55**	-.38**	-.6**	-.07	-.12**	-.37**	-.29**	-.19**	-.64**
Innere Ruhe (FEW 16)	-.69**	-.47**	-.8**	-.19**	-.2**	-.46**	-.33**	-.23**	-.68**
Genussfähigkeit (FEW 16)	-.53**	-.36**	-.56**	-.07	-.14**	-.38**	-.29**	-.17**	-.63**
Arbeitsengagement (gesamt, UWES9)	-.37**	-.11*	-.42**	.02	-.04	-.31**	0	-.06	-.31**
Elan (UWES9)	-.39**	-.17**	-.45**	-.02	-.07	-.33**	-.02	-.11*	-.34**
Beteiligung (UWES9)	-.36*	-.1*	-.4**	.1	0	-.25**	-.06	-.01	-.32**
Vertieftsein (UWES9)	-.3**	-.06	-.34**	0	-.04	-.28**	.06	-.06	-.23**
Mindwandering	.36**	.18**	.34**	0	-.01	.2**	.07	.1*	.28**
Daydreaming	.29**	.18**	.26**	.03	.03	.24**	.03	.17**	.12**
Extraversion (TIPI)	-.21**	-.02	-.22**	.05	.03	-.2**	-.01	.04	-.2**
Verträglichkeit (TIPI)	-.29**	-.23**	-.38**	-.18**	-.24**	-.44**	-.11*	-.31**	-.27**
Gewissenhaftigkeit (TIPI)	-.36**	-.2**	-.41**	-.09	-.13**	-.4**	-.04	-.17**	-.32**
Emotionale Stabilität (TIPI)	-.67**	-.43**	-.76**	-.15**	-.15**	-.49**	-.26**	-.25**	-.6**
Offenheit (TIPI)	-.31**	-.21**	-.32**	-.1*	-.16**	-.34**	-.11*	-.16**	-.32**

N = 455, ** = p < .01, * = p < .05, R:Rajas, ko = Kognition, ar = Arbeitsstil, em = Emotionen, mo = Motive, sp = Spirituelle Ausrichtung, vo = Volition, ak = Aktivitätsniveau, so = Sozialverhalten, ge = Gesundheit & Gesundheitsverhalten

Tabelle 22 Korrelationen der Tamas-Subskalen mit Außenkriterien

	Tko	Tar	Tem	Tmo	Tsp	Tvo	Tak	Tso	Tge
Stimmungsniveau (HSWBS)	-.27**	-.46**	-.82**	-.61**	-.22**	-.52**	-.57**	-.54**	-.62**
Lebenszufriedenheit (HSWBS)	-.25**	-.41**	-.74**	-.61**	-.17**	-.5**	-.49**	-.41**	-.56**
Gute Laune (BFS)	-.24**	-.41**	-.72**	-.57**	-.16**	-.5**	-.53**	-.49**	-.58**
Ruhe (BFS)	-.25**	-.4**	-.65**	-.55**	-.2**	-.47**	-.51**	-.46**	-.57**
Aktiviertheit (BFS)	-.26**	-.54**	-.6**	-.5**	-.17**	-.62**	-.64**	-.42**	-.7**
Deprimiertheit (BFS)	.24**	.47**	.8**	.66**	.14**	.55**	.56**	.48**	.56**
Erregtheit (BFS)	.27**	.43**	.6**	.56**	.17**	.44**	.49**	.48**	.45**
Energielosigkeit (BFS)	.29**	.68**	.63**	.6**	.14**	.74**	.76**	.49**	.72**
Ärger (BFS)	.27**	.42**	.63**	.55**	.18**	.48**	.49**	.65**	.45**
Stress (gesamt, PSQ)	.29**	.53**	.77**	.66**	.23**	.57**	.65**	.54**	.69**
Anspannung (PSQ)	.27**	.52**	.69**	.58**	.21**	.54**	.62**	.49**	.62**
Anforderungen (PSQ)	.11*	.26**	.43**	.39**	.09	.26**	.36**	.34**	.38**
Freude (PSQ)	-.29**	-.51**	-.74**	-.62**	-.22**	-.56**	-.62**	-.52**	-.68**
Sorgen (PSQ)	.23**	.51**	.75**	.67**	.21**	.54**	.59**	.49**	.56**
Körperliches Wohlbefinden (gesamt, FEW16)	-.32**	-.54**	-.72**	-.62**	-.22**	-.6**	-.67**	-.5**	-.76**
Belastbarkeit (FEW16)	-.25**	-.45**	-.51**	-.46**	-.12**	-.48**	-.53**	-.31**	-.66**
Vitalität (FEW16)	-.25**	-.47**	-.62**	-.52**	-.18**	-.51**	-.63**	-.42**	-.68**
Innere Ruhe (FEW16)	-.27**	-.46**	-.73**	-.62**	-.18**	-.53**	-.57**	-.55**	-.6**
Genussfähigkeit (FEW16)	-.35**	-.47**	-.61**	-.52**	-.26**	-.54**	-.56**	-.43**	-.68**
Arbeitsengagement (gesamt, UWES9)	-.34**	-.49**	-.53**	-.42**	-.21**	-.51**	-.52**	-.4**	-.51**
Elan (UWES9)	-.33**	-.54**	-.56**	-.44**	-.26**	-.54**	-.58**	-.43**	-.54**
Beteiligung (UWES9)	-.32**	-.43**	-.5**	-.39**	-.18**	-.46**	-.47**	-.37**	-.48**
Vertieftsein (UWES9)	-.3**	-.43**	-.43**	-.35**	-.16**	-.45**	-.43**	-.34**	-.43**
Mindwandering	.18**	.36**	.28**	.33**	0	.38**	.36**	.27**	.27**
Daydreaming	-.03	.35**	.22**	.3**	-.03	.32**	.28**	.21**	.19**
Extraversion (TIPI)	-.2**	-.42**	-.41**	-.37**	-.09*	-.39**	-.41**	-.21**	-.37**
Verträglichkeit (TIPI)	-.24**	-.23**	-.34**	-.26**	-.19**	-.25**	-.23**	-.6**	-.23**
Gewissenhaftigkeit (TIPI)	-.28**	-.63**	-.42**	-.49**	-.09	-.67**	-.59**	-.39**	-.5**
Emotionale Stabilität (TIPI)	-.32**	-.5**	-.74**	-.65**	-.19**	-.56**	-.58**	-.55**	-.57**
Offenheit (TIPI)	-.4**	-.33**	-.39**	-.4**	-.26**	-.39**	-.36**	-.32**	-.38**

N = 455, ** = $p < .01$, * = $p < .05$, T: Tamas, ko = Kognition, ar = Arbeitsstil, em = Emotionen, mo = Motive, sp = Spirituelle Ausrichtung, vo = Volition, ak = Aktivitätsniveau, so = Sozialverhalten, ge = Gesundheit & Gesundheitsverhalten

3.8.4 Studien-Instruktion

Sehr geehrte/r Untersuchungsteilnehmer/in,

vielen Dank, dass Sie sich die Zeit nehmen möchten diese Studie zu unterstützen und den Fragebogen auszufüllen.

Diese Untersuchung ist Teil einer Promotionsarbeit an der TU Chemnitz, welche eine psychologische Theorie aus der Yoga Tradition untersucht.

Der Fragebogen besteht aus 238 kurzen Fragen. Es dauert ca. 30 Minuten den gesamten Fragbogen auszufüllen. Die Fragen sind als Aussagen formuliert und die Antwortmöglichkeiten sind vorgegeben.

Bitte wählen Sie pro Aussage, inwieweit diese Aussage auf Sie zutrifft bzw. inwieweit Sie der Aussage zustimmen. Wenn Sie unsicher sind, dann wählen Sie bitte die Alternative, die am ehesten auf Sie zutrifft. Beantworten Sie dabei nach Ihrer persönlichen Einschätzung, es gibt keine richtigen oder falschen Antworten. Bitte lassen Sie keine Frage aus.

Diese Befragung ist anonym. Das heißt, es ist nicht möglich die Antworten, die Sie geben, auf Ihre Person zurückzuführen.

Als kleines Dankeschön möchten wir Sie gern über die Ergebnisse der Untersuchung informieren. Falls Sie daran interessiert sind, schreiben Sie bitte eine E-Mail an info@yogapsychologie.de

Vielen herzlichen Dank für Ihre Mühe und Zeit und viel Spaß beim Beantworten der Fragen!

3.8.5 Fragebögen

Habituelle Wohlbefindens-Skala (HSWBS)

Lebenszufriedenheit-Skala: Items 1, 3, 4, 6, 7, 9, 12

Stimmungsniveau-Skala: Items 2, 5, 8(u), 10(u), 11, 13

Items hinter welchen „(u)“ steht, müssen umgepolt werden.

Bitte beurteilen Sie im Folgenden, wie es Ihnen im Allgemeinen geht und wie zufrieden Sie im Allgemeinen mit Ihrem Leben sind. Nehmen Sie bitte zu jeder der folgenden Aussagen Stellung und entscheiden Sie, inwieweit jede auf Sie ganz persönlich zutrifft. Kreuzen Sie dazu bitte jeweils eine Antwortalternative an, und lassen Sie bitte keine Aussage aus.

Tabelle 23 Habituelle Wohlbefindens-Skala (HSWBS)

	stimmt überhaupt nicht	stimmt weitgehend nicht	stimmt eher nicht	stimmt ein wenig	stimmt weitgehend	stimmt genau
1. Mein Leben könnte kaum glücklicher sein, als es ist.						
2. Ich fühle mich meist ziemlich fröhlich.						
3. Ich glaube, dass sich vieles erfüllen wird, was ich mir für mich erhoffe.						
4. Wenn ich an mein bisheriges Leben zurückdenke, so habe ich viel von dem erreicht, was ich erstrebe.						
5. Ich halte mich für eine glückliche Person.						
6. Ich bin mit meinem Leben zufrieden.						
7. Ich glaube, dass mir die Zeit noch einige interessante und erfreuliche Dinge bringen wird.						
8. Ich bin nicht so fröhlich wie die meisten Menschen.						
9. Ich bin mit meiner Lebenssituation zufrieden.						
10. Ich bin selten in wirklicher Hochstimmung.						
11. Ich sehe im Allgemeinen mehr die Sonnenseiten des Lebens.						
12. Wenn ich so auf mein bisheriges Leben zurückblicke, bin ich zufrieden.						

Befindlichkeitsskalen zur Messung der Grundgestimmtheit (BFS)

Aktiviertheit-Skala: Items 6, 13, 30, 33, 34

Erregtheit-Skala: Items 2, 15, 20, 26, 35

Gute-Laune-Skala: Items 3, 19, 28, 36, 39

Ruhe-Skala: Items 14, 17, 29, 32, 38

Energielosigkeit-S.: Items 7, 21, 22, 25, 40

Ärger-Skala: Items 8, 11, 24, 27, 37

Deprimiertheit-Skala: Items 1, 4, 9, 16, 23

Besinnlickeit-Skala: Items 5, 10, 12, 18, 31

Dies ist eine Liste von Wörtern, mit denen man beschreiben kann, wie man sich im Allgemeinen fühlt. Bitte gehen Sie die Wörter der Liste nacheinander durch und entscheiden Sie sofort bei jedem Wort, in wieweit es für Ihr allgemeines Befinden zutrifft. „Wie haben Sie sich in der letzten Woche gefühlt?“

Tabelle 24 Befindlichkeitsskalen zur Messung der Grundgestimmtheit (BFS)

	gar nicht	kaum	Mitte	ziemlich	sehr
1. gedrückt					
2. ruhelos					
3. unbeschwert					
4. betrübt					
5. nachdenklich					
6. frisch					
7. passiv					
8. missmutig					
9. traurig					
10. beschaulich					
11. ärgerlich					
12. nach innen gekehrt					
13. angeregt					
14. locker					
15. nervös					
16. niedergeschlagen					
17. gelöst					
18. träumerisch					
19. angenehm					
20. verkrampft					

	gar nicht	kaum	Mitte	ziemlich	sehr
21. energielos					
22. lasch					
23. unglücklich					
24. sauer					
25. träge					
26. angespannt					
27. gereizt					
28. ausgezeichnet					
29. entspannt					
30. voller Energie					
31. besinnlich					
32. ruhig					
33. tatkräftig					
34. aktiv					
35. kribbelig					
36. gut gelaunt					
37. mürrisch					
38. gelassen					
39. freudig					
40. lahm					

Fragebogen zur Erfassung körperlichen Wohlbefindens (FEW 16)

Belastbarkeit-Skala: Items 1, 5, 8, 10
Vitalität-Skala: Items 2, 4, 9, 12
Genussfähigkeit-Skala: Items 7, 11, 13, 14
Innere Ruhe-Skala: Items 3, 6, 15, 16

Bei den folgenden Fragen geht es um Wohlbefinden. Die Fragen beziehen sich auf den Umgang mit dem Körper, auf Belastbarkeit und Entspannung. Bitte überlegen Sie, wie Sie sich in den letzten drei Wochen im Allgemeinen gefühlt haben. Geben Sie dann bei den einzelnen Aussagen an, inwieweit Sie ihnen zustimmen können. Wählen Sie jeweils das Kästchen, das am besten auf Sie zutrifft. Beantworten Sie bitte alle Fragen. Beantworten Sie die Frage auch dann, wenn Sie den Eindruck haben, eine ähnliche Frage schon einmal beantwortet zu haben.

Tabelle 25 Fragebogen zur Erfassung körperlichen Wohlbefindens (FEW 16)

	trifft überhaupt nicht zu	trifft kaum zu	trifft eher nicht zu	trifft eher zu	trifft überwiegend zu	trifft voll und ganz zu
1. Mein Körper ist robust.						
2. Ich habe einen erholsamen Schlaf.						
3. Mich kann kaum etwas aus der Ruhe bringen.						
4. Ich wache morgens ausgeschlafen auf.						
5. Mein Körper ist widerstandsfähig.						
6. Ich fühle mich innerlich im Gleichgewicht.						
7. Ich habe ein sicheres Gefühl für das, was meinem Körper gut tut.						
8. Ich erlebe meinen Körper als leistungsfähig.						
9. Nach dem Aufwachen bin ich ausgeruht.						
10. Ich bin körperlich belastbar.						
11. Ich nehme mir Zeit, meinem Körper Gutes zu tun.						
12. Ich wache morgens energiegeladen auf.						
13. Ich kann es mir körperlich richtig gutgehen lassen.						
14. Ich habe ein gutes Gefühl für das, was mein Körper braucht.						
15. Ich bin ruhig und gelassen.						
16. Ich bin ausgeglichen.						

Perceived Stress Questionnaire (PSQ)

Sorgen-Skala: Items 5, 7, 10, 13, 15

Freude-S.: Items 4(u), 8(u), 12(u), 14(u), 16(u)

Anspannung-Skala: Items 1(u), 6(u), 9, 17, 18

Anforderungen-Skala: Items 2, 3, 11, 19(u), 20

Items hinter welchen „(u)“ steht, müssen umgepolt werden.

Bitte lesen Sie jede der folgenden Feststellungen durch und wählen Sie aus den vier Antworten diejenige aus, die angibt, wie häufig die Feststellung auf Ihr Leben in den letzten vier Wochen zutrifft.

Tabelle 26 Perceived Stress Questionnaire (PSQ)

	fast nie	manchmal	häufig	meistens
1. Sie fühlen sich ausgeruht.				
2. Sie haben das Gefühl, dass zu viele Forderungen an Sie gestellt werden.				
3. Sie haben zu viel zu tun.				
4. Sie haben das Gefühl, Dinge zu tun, die Sie wirklich mögen.				
5. Sie fürchten, Ihre Ziele nicht erreichen zu können.				
6. Sie fühlen sich ruhig.				
7. Sie fühlen sich frustriert.				
8. Sie sind voller Energie.				
9. Sie fühlen sich angespannt.				
10. Ihre Probleme scheinen sich aufzutürmen.				
11. Sie fühlen sich gehetzt.				
12. Sie fühlen sich sicher und geschützt.				
13. Sie haben viele Sorgen.				
14. Sie haben Spaß.				
15. Sie haben Angst vor der Zukunft.				
16. Sie sind leichten Herzens.				
17. Sie fühlen sich mental erschöpft.				
18. Sie haben Probleme, sich zu entspannen.				
19. Sie haben genug Zeit für sich.				
20. Sie fühlen sich unter Termindruck.				

Kurzversion der Utrecht Workengagement Scale (UWES-9)

Elan-Skala: 1, 2, 5

Beteiligung-Skala: 3, 4, 7

Vertieftsein-Skala: 6, 8, 9

In der folgenden Liste finden Sie Aussagen dazu, wie man die Arbeit erleben kann. Kreuzen Sie bitte das für Sie Zutreffende an. Bitte beachten Sie, dass Sie hier sieben Antwortmöglichkeiten haben.

Tabelle 27 Kurzversion der Utrecht Workengagement Scale (UWES-9)

	0 fast nie	1 fast nie – ein paar Mal im Jahr oder weniger	2 ab und zu – einmal im Monat oder weniger	3 regelmäßig – ein paar Mal im Monat	4 häufig – einmal in der Woche	5 sehr häufig – ein paar Mal in der Woche	6 immer – jeden Tag
1. Bei meiner Arbeit bin ich voll überschäumender Energie.							
2. Beim Arbeiten fühle ich mich fit und tatkräftig.							
3. Ich bin von meiner Arbeit begeistert.							
4. Meine Arbeit inspiriert mich.							
5. Wenn ich morgens aufstehe, freue ich mich auf meine Arbeit.							
6. Ich fühle mich glücklich, wenn ich intensiv arbeite.							
7. Ich bin stolz auf meine Arbeit.							
8. Ich gehe völlig in meiner Arbeit auf.							
9. Meine Arbeit reißt mich mit.							

Ten-Item-Personality-Inventory (TIPI-G)

Extraversion-Skala: 1, 6(u)

Verträglichkeit-Skala: 2(u), 7

Gewissenhaftigkeit-Skala: 3, 8(u)

Emotionale Stabilität-Skala: 4(u), 9

Offenheit für Erfahrungen-Skala: 5, 10(u)

Items hinter welchen „(u)“ steht, müssen umgepolt werden.

Bitte schätzen Sie ein, inwieweit folgende Adjektive auf Sie zutreffen. Ich sehe mich selbst als:

Tabelle 28 Ten-Item-Personality-Inventory (TIPI-G)

	trifft überhaupt nicht zu	trifft größtenteils nicht zu	trifft eher nicht zu	weder zutreffend noch unzutreffend	trifft eher zu	trifft größtenteils zu	trifft voll und ganz zu
1. extravertiert, begeistert							
2. kritisch, streitsüchtig							
3. zuverlässig, selbstdiszipliniert							
4. ängstlich, leicht aus der Fassung zu bringen							
5. offen für neue Erfahrungen, vielschichtig							
6. zurückhaltend, still							
7. verständnisvoll, warmherzig							
8. unorganisiert, achtlos							
9. gelassen, emotional stabil							
10. konventionell, unkreativ							

Kurzversion des Imaginal Process Inventory (IPI)

Mindwandering-Skala: 1, 2, 8, 9, 10

Daydreaming-Skala: 3, 4, 5, 6, 7

In den folgenden Fragen geht es um Aufmerksamkeit, Konzentration und Tagträume.

Tabelle 29 Kurzversion des Imaginal Process Inventory (IPI)

	0 = stimme gar nicht zu	1	2	3	4	5 = stimme vollkommen zu
1. Meine Gedanken wandern eher selten weg von der Sache mit der ich mich gerade beschäftige.						
2. Meine Aufmerksamkeit wandert eher selten von meiner Arbeit ab.						
3. Ich tagträume mehrere Male am Tag.						
4. Tagträume und Fantasien machen einen großen Teil meiner Gedanken aus.						
5. Ich würde mich als regelmäßigen Tagträumer beschreiben.						
6. Ich verliere mich mehrere Male am Tag in bewusstem Tagträumen.						
7. Ich tagträume während der Arbeit (oder in der Schule) mehrere Male am Tag.						
8. Ich bin eine Person, deren Gedanken oft umherwandern.						
9. Ich habe Schwierigkeiten meine Konzentration über eine lange Zeit aufrecht zu erhalten.						
10. Egal, wie sehr ich versuche mich zu konzentrieren – Gedanken, die nichts mit meiner Arbeit zu tun haben, schleichen sich ein.						

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4. Promoting Well-Being on the Basis of the Tri-Guna Model

4.1 Abstract

The *tri-guna* model is an approach to health and well-being from Indian Psychology. The purpose of this study was to test an intervention in regard to its effectiveness in changing the *gunas* in a way that would increase well-being and decrease perceived stress. In the framework of a multiple baseline study 24 participants took part in the eight-week training. First, the participants learned to apply mantra mediation daily. In the following seven weeks, the training addressed a variety of behaviors connected with the *gunas*, such as mental stress-management, balancing work and recuperation, managing will-power and mindful decision-making and social behavior. The effects of the training were medium to large for the improvement in regard to the *gunas*. Furthermore, psychological and physical well-being, self-regulation and the worries sub-scale of the perceived stress questionnaire improved significantly. The values of perceived stress (total) and other variables also changed in a small to medium degree, but due to lack of statistical power for small and medium effects we were not able to conclude whether these changes were systematic.

4.2 Introduction

A few decades ago health scientists realized that only investigating what helps people overcome illness would not lead to a profound understanding of health. What about the factors that lead to and preserve health? What are they and can they be strengthened? Does strengthening them help prevent disease? This new category of questions started research on well-being and happiness. In the meantime a number of programs and interventions with the aim to increase well-being have been initiated (Cloninger, 2006; Fordyce 1977; Frisch, 2013; Gander, Proyer, Ruch & Wyss, 2013; Kaluza, 2011a; Seligman, Steen, Park & Peterson, 2005; Ruini & Fava, 2012; Sin & Lyubomirsky, 2009). Besides these approaches from western academic theorizing and research, there are other approaches to how well-being can be increased, amongst them theories from ancient India (also called “Indian psychology”), which have, however, been largely neglected in the west, so far. In recent years researchers from India have started a movement with the goal of investigating these ancient ideas empirically and reviving their impact (Cornelissen, Misra & Varma, 2011; Rao, Paranjpe & Dalal, 2008). One model of psychological health taken from Indian psychology is the model of *tri-guna*, which has promising features, such as that it addresses well-being in a holistic way, integrating components that are dealt with separately in western academic psychology such as developing virtues, refining one’s energy management and spirituality. This model also provides an approach to psychological disease, thus bringing disease and health together

in one model. The *tri-guna* model appears sporadically in studies conducted over the last few decades. Mainly, researchers developed questionnaires to measure the components of the *tri-guna* model and then used them in various correlation studies. However, we found these questionnaires inadequate for many reasons, first and foremost due to insufficient theoretical foundations. For this reason we first formulated a working model for the *tri-guna* model and secondly developed a scale based on this model (Puta & Sedlmeier, 2014; Puta & Sedlmeier, 2015). Thirdly, we conducted an intervention study aimed at increasing well-being on the basis of the *tri-guna* model. The goal of this article is to present the results of this study. We begin by summarizing the *tri-guna* model. Next, we describe the content and structure of the eight training sessions. The subsequent section explains the study design – a multiple baseline design – and the inventories we used to measure the dependent variables. This is followed by a description of the study participants and the procedures and software we employed in analyzing the study data. Finally, we present the results and conclude with a discussion of the study outcomes.

4.3 The Three Gunas

According to the *tri-guna* model the psyche is influenced by three energies (*gunas*), namely *sattva-guna* ("goodness", "intelligibility", "lucidity"), *raja-guna* ("activity", "passion") and *tama-guna* ("inertia", "ignorance", "darkness"). The extent of their strength differs intra- and inter-individually and influences human experience and behavior. They are described to "compete" for dominance, which doesn't mean that any one of them is ever nullified completely since they also depend on each other (Ganganatha, 1896). All three fulfill necessary functions, however, whereas a dominance of *rajas* and *tamas* leads to psychological disturbances (Balodhi, 2005; Kapur, 2008), well-being is highest when *sattva-guna* predominates (Deussen & Strauss, 1906; Stempel, Cheston, Greer & Gillespie, 2006). In terms of the philosophical origin of the *guna* model, it is part of a larger Indian philosophy called *Sankhya* (Colebrooke & Wilson, 1837; Ganganatha, 1896; Larson & Bhattacharya, 1987). According to *Sankhya*, the main reason why dominant *sattva-guna* is said to lead to well-being is because it facilitates a stronger psychological contact to the spiritual core of persons that is described as the eternal self and most commonly termed *purusha* or *atman*. It is described as the source of life and consciousness. The goal of most yoga practices is to become fully aware of the *atman*. This awareness of the *atman*, or spiritual awareness, and *sattva* are seen as reinforcing each other since not only is *sattva* said to facilitate spiritual awareness, but practicing spiritual awareness is also said to increase *sattva*. However, the

mechanisms theorized by *Sankhya* are not the focus of this study and the hypotheses regarding the *gunas* can be investigated independently.

Descriptions of the *gunas* from Indian psychological thought give numerous indicators for the *gunas* in a variety of aspects of human experience and behavior. Puta & Sedlmeier (2014) collected these indicators and sorted them according to the categories of a behavioral equation (Westhoff, Hagemeister & Strobel, 2007). This equation states that behavior is a function of six factor groups and their interactions: *behavior = fI (cognitive, emotional, motivational and social variables, variables of the organism and the environment)*. Table 1 summarizes the working model.

Table 2 Indicators for the Gunas in the Categories of the Behavioral Equation

	Sattva	**Rajas**	**Tamas**
cognitive variables	receptive mind, good memory, intelligent, wise, perception of the spiritual connectedness of all beings, knowledge of the *atman* (soul), strong self-efficacy, free from worries and doubts, differentiated thinking, reflective, liberal, confident, seeing things the way they are, seeing the good in everything, full of foresight, well-structured, free from false ego, focus on the internal	inconsistent knowledge, fluctuating memory, considering the material body to be the self, worries, doubts, inability to see things the way they are, perception of reality is distorted by personal interests, racing thoughts, nervousness, distraction, focus on the external	stupor, forgetfulness, ignorance, unfounded knowledge, undifferentiated thinking, mental laziness, inability to understand things the way they are, negativity, inattentiveness, focus on the external
emotional variables	frequent positive emotions, emotional balance, lasting experience of happiness that rests on the inner connection to the *atman*	frequent negative emotions (e.g. impatient, frustrated), turbulence, experience of happiness that rests on immediate gratification and turns into suffering later	frequent negative emotions (e.g. depressed, hopeless), experience of happiness based on negligence and laziness
motivational variables	motivated for spiritual experiences, no ambition for materialism, unbreakable determination, self-control, determination to avoid harmful but momentarily pleasing things, fulfilling duties without expecting a material reward, maintaining enthusiasm in success and failure	motivated to satisfy lust, striving for fortune, power and prestige, worldly motives/material desires, hankering that is never satisfied, unsteadfastness, passionate, excessive endeavor, chronically driven to be active, motivated by success, demotivated by failure	unrealistic desires, disinclined toward constructive activity, questionable goals, lack of self-control, choosing the path of least resistance, lack of willpower, undisciplined, not considering consequences, lethargy, negligence of action, procrastination, disinterest in spirituality
social variables	confident, humble, free from egoism and self-absorption, interested in others, favorably disposed to all, benevolent, generous, agreeable, honest, appreciative, tolerant, giving for the sake of giving	manipulative, egoistic, covert selfish interests, seeking for power, wanting to impress others	quarrelsome, insensitive, blind faith in own correctness
physical variables	vital, healthy, harmony, body feels light, refreshing sleep	stress, disequilibrium, restless sleep	low energy, body feels heavy, sleep barely restorative

variables of the environment	environment: bright, natural property: lifestyle doesn't demand much of natural resources	environment: urban property: excessive demand of natural resources	environment: "casinos","bars" property: poverty

To sum up: Persons with dominant *sattva-guna* are balanced and mindful, frequently experience positive emotions and are satisfied with their lives. They are enthusiastic, persistent, interested in spirituality and health-conscious. They are interested in and commit themselves to the welfare of others. Persons with dominant *raja-guna* are stressed, restless, dissatisfied and worry a lot. They strive for money and prestige and focus on their own interests in relationships. Dominant *tama-guna* makes people feel weak and sluggish. These persons are pessimistic, avoid tackling their problems and procrastinate with work. They are also dissatisfied and frequently experience negative emotions. A few studies have examined these hypotheses (see Puta & Seldmeier, 2014, for an overview of empirical results). Although not all results are in line with the assumptions (e.g. Sharma, 1999, Bhal & Debnath, 2006, Daftuar & Anjuli, 1997) and the model is still in a working model status and needs further clarification, most results confirm the ideas of the model. Amongst other variables *sattva* correlated positively with personal effectiveness (Kaur & Sinha, 1992), emotional intelligence (Khemka, Ramarao & Hankey, 2011), a positive self-concept (Sharma, 1999), conscientiousness, agreeableness, openness to experience (Hopkins, 2003), an idealistic ethical orientation (Bhal & Debnath, 2006) and negative with attention problems, aggressive behavior (Archana Das & Venu Gopal, 2009), occupational stress (Daftuar & Anjuli, 1997), feelings of personal inferiority, phobic fear (Stempel et al. 2006) and neuroticism (Hopkins, 2003; Sitamma, 2005). *Rajas* and *tamas* correlate positively with variables such as attention problems (Archana Das & Venu Gopal, 2009), neuroticisim (Hopkins, 2003), anxiety, symptoms of psychological ailment (Stempel et al., 2006) and negatively with agreeableness, conscientiousness and openness to experience (Hopkins, 2003). Furthermore, *tamas* correlates positively with psychoticism, phobic anxiety, depression, feelings of inferiority (Stempel et al., 2006) and aggressive behavior (Archana Das & Venu Gopal, 2009). In a recent study we found further correlations that highlight the strong relatedness of the *gunas* to well-being (Puta & Sedlmeier, 2015). *Sattva* correlated positively and *rajas* and *tamas* negatively with different indicators of well-being like positive emotions, life satisfaction, calmness, being activated, experiencing pleasure, resilience, vitality and the ability to enjoy oneself. Moreover, *sattva* correlated negatively with depressiveness, tumultuousness, lethargy, anger, worries and being overstrained and tense. Albeit with different correlation strengths, *rajas* and

tamas correlated positively with depressiveness, tumultuousness, anger, worries, being overstrained and tension, additionally *tamas* correlated positively with lethargy.

Indian psychology also deals with how *sattva* can be strengthened and *rajas* and *tamas* decreased. The general principle is similar to the idea from western academic thought that well-being develops in a positive spiral or that resources come along in resource caravans, one positive trait, experience or habit facilitating the next. Therefore, it is recommended to try to align one's behavior as far as possible with the action modes of *sattva* in order to strengthen it (Goswami & Adhikari, 1988). The stronger *sattva* becomes, the easier and more natural it will be to continue acting in *sattva* (Maheshwar, 1978).

Additionally, the traditional literature of Indian psychology recommends different specific practices to increase *sattva* (see Puta & Sedlmeier, 2014, for an overview). In general, most forms of yoga include developing *sattva* as part of their curriculum and also often claim to increase *sattva* by their particular practices (Braud, 2008; Bryant, 2009; Ganguli, 2005; Ranade, 1994; Tagare, 1976). Specific practices that are recommended include meditation (Bryant, 2009; Ranade, 1994; Verma, 1997), developing spiritual awareness (Ranade, 1994; Nilakantan, 1989; Wolf, 2008), monitoring, controlling and restraining oneself, specifically the senses, mind and speech (Frawley, 1999; Maheshwar, 1978; Michel, 2006; Tagare, 1978), being non-violent and well-meaning towards others (Bryant, 2009; Frawley, 1997; Ranade, 1994; Sharma; 1994), developing virtues like patience and contentment (Deussen & Strauss, 1906; Tagare, 1978; Larson & Bhattacharya, 1987), avoiding excessive activity (Verma, 1997) and implementing routines into one's daily life (Ranade, 1994; Verma, 1997). Some positive effects of respective interventions have already been found. Wolf & Abell (2003) showed the positive effect of mantra meditation on *sattva*. Deshpande, Nagendra and Raghuram (2008) found that *sattva* increased and *rajas* and *tamas* decreased by physical exercise. Rani and Rani (2009) found higher *sattva* scores in long-term (two to five years) *hatha-yoga* practitioners versus short term (six months to two years) practitioners and Khema, Ramarao and Hankey (2011) demonstrated that *rajas* and *tamas* decreased in participants of yoga therapy. Considering the vast possibilities for interventions for increasing *sattva*, we wanted to test a psychological intervention that would address a wide range of possible *sattvic* behavior changes across different aspects of behavior. Based on the recommendations given in Indian psychology and practices from empiric western research that have proven useful in achieving certain *sattva*-related goals a training was compiled, which is described in the next section.

4.4 The Sattva Training

The training consisted of eight 90 minute sessions which each dealt with a separate method of increasing *sattva* and decreasing *rajas* and *tamas*. The first session started with the participants introducing themselves, followed by an introduction into the *guna* model and information and instructions on a meditation practice. The second and third sessions were oriented on classical cognitive restructuring with the aim of increasing *sattva* in thinking content and style. Sessions four and five addressed energy management, the characteristics of true recreation and how to bring more *sattva* into one's working style. In session six the participants learned how to strengthen their will-power to reach personal goals. Session seven addressed a strategy for resolving inner conflicts and ambivalence in the context of making important decisions and in session eight the participants learned techniques of improving their communication in order to strengthen *sattva* in their relationships.

The participants were specifically asked to practice the mantra meditation daily. To keep this practice alive, all sessions (except the first) started with a ten minute mantra meditation. We also encouraged the participants to practice the other aspects of the training in their daily life. As a reminder for this and so that questions that may have come up during practice, the mantra meditation of each session was followed by a group sharing of how the application of the practices of the previous session went. The course trainer specifically reinforced shares that reported having practiced the topics of the previous session by questions that deepened the share and non-verbal communication. To further enhance transfer, the participants were requested to write down their personal two to four take-home-messages on "transfer cards" at the end of each session.

Meditation

An essential part of the training was for the participants to learn a simple and short meditation which they were requested to practice every day. First the participants were informed about the effects of meditation gathered in various studies (Sedlmeier, Eberth, Schwarz, Zimmermann, Haarig, Jaeger & Kunze, 2012) and the summarizing "Inner Silence and Insights" framework model of meditation effects (Eberth, 2013). Then the participants were instructed on the meditation technique. We chose a mantra meditation since it is one of the easiest forms of meditation. Perhaps the way mantra meditation engages the senses to support the concentration can be compared to how the body is engaged in progressive muscle relaxation (PMR), thus often seen as the easiest relaxation technique by therapists, in contrast to other relaxation techniques that take place only in the mind. PMR is a relaxation method in which one first contracts a muscle group and then relaxes it. One concentrates on this shift

between tension and relaxation of the muscles and in the relaxation phases further on the overall increasing relaxation. Thus, both body and mind are actively engaged in the technique. Other relaxation techniques, for instance autogenic training, lead to relaxation only by mental practices, the body is completely still during the training. Similarly, the body is (supposed to be) completely still in many meditation practices (usually after a short breathing exercise or exercise to facilitate a comfortable posture), but not during mantra meditation, during which it is actively engaged (hearing, speaking, touch) to support the meditation.

During mantra meditation the practitioner repeats a mantra verbally, listens to it and counts the number of times the mantra has been repeated with his or her fingers on beads in order to keep track that an individual daily minimum is completed. All the while the practitioner concentrates on the meaning of the mantra. The mantra we asked the participants to meditate on is from the *Brihadaranyaka Upanishad* (1.3.28): *asato ma sad gamaya, tamaso ma jyotir*[3] *gamaya, mrityor mamritam gamaya* and means "Take me from the unreal to the real, from darkness to light and from mortality to immortality." (Schmieke & Swami, 2007). The participants were further encouraged to understand the mantra as a meditation for increasing spiritual awareness and to meditate on the spiritual core of their being, the *atma*, in case they believed that it exists (if not, they were requested to focus on their intention of increasing their satisfaction and well-being (represented by "coming to the real and light")). Each participant was given a string of 108 beads to count their mantra repetitions. They were asked to repeat the mantra 108 times daily, which takes about ten minutes. If this seemed too much to them right from the start they were encouraged to start with a lower minimum and work their way up with increased practice. We emphasized that it was better to meditate a few minutes daily than longer stretches every now and then. Furthermore, they were encouraged to meditate in the morning, or, if this was impractical, at any other (regular) time of the day of their choice. After the explanation the group meditated for a few minutes, everyone individually with their meditation beads. Some participants who were already practicing meditation feared a new meditation might interfere with their practice and requested to continue with the meditation they were already familiar with instead of taking to the mantra meditation. In order to not lose them as study participants we agreed to this option, however emphasizing that we would prefer them to practice the same meditation as the other participants. All in all, of 24 participants, 16 practiced the mantra meditation we introduced, two practiced a mantra meditation but with a different mantra, two practiced laya yoga meditation, one person vipassana, one person practiced breathing and guided meditations and

[3] "j" pronounced as in "jungle"

two started out with the mantra meditation, but didn't persist and practiced yoga instead. In order to underline the importance of the meditation and allow the participants to make further experiences with it, we started all other sessions with a ten minute group mantra meditation. The difference to the individual mantra meditation was that the group vocalized the mantra together in one voice (including those participants that generally practiced a different meditation). To facilitate the meditation we sang the mantra along to a melody played on a harmonium by the course instructor. The course instructor repeatedly sang the mantra first, followed by the group singing in chorus. The participants responded very positively to this and even recorded the meditation so they could hear it and sing along at home.

Cognitive Restructuring

The goal of the second and third session was to cover the recommendations for mind control, in other words to strengthen *sattva* in cognition. The participants learned to question and correct biased negative perceptions and appraisals in session two and to balance dysfunctional, exaggerated beliefs in session three. In both sessions we applied standard techniques for cognitive restructuring as described by Wilken (2010). Didactically this block was close to the mental training of Kaluza's (2011b) stress management training also utilizing some of his worksheets. The participants were very active in both sessions.

In session two their task was to identify a personal biased perception and/or appraisal in a typical situation in their daily life that made them feel *rajasic* or *tamasic*. Then they were requested to collect questions that would help them take on a new perspective. They shared their work with a partner, and in the final step all questions were gathered in the plenum. Since the questions were of a general nature and independent from the concrete situation of the respective participant (for example "What can I learn from this?" or "Do I necessarily have to take this personally?"), the participants were not shy to share the results of their work in this form. At the end, each participant wrote down one question they found particularly helpful and wanted to practice for the next weeks.

In session three the participants learned to use the "value and development square" (Schulz von Thun, 2003) in order to balance exaggerated beliefs/motives/values that lead to *rajas* and/or *tamas*. This was practiced in groups with the examples of the following five basic human motives: the desires for achievement, control, autonomy, appreciation and an easy life. The participants developed sentences that expressed their newfound balanced belief or value and each wrote down one sentence they wanted to internalize the coming weeks (for example "I will remain calm, even in the face of uncertainty.").

Recreating and Working in Sattva

In sessions four and five the participants reflected their style of recreating and working with the goal of bringing more *sattva* into it. In session four we discussed why recreation is important and what characterizes truly recreational activities vs. free time spent mainly in *rajas* or *tamas*. At the end of session four, we introduced the participants to progressive muscle relaxation developed by Jacobson, followed by a 30 minute PMR relaxation exercise. The participants were encouraged to reflect on their own recreation and to practice PMR and received access to a recording that is offered for free online by a German health insurance.

The fifth session started with the participants collecting strategies of how to increase *sattva* in one's style of working in two groups. One group examined it from the perspective of a person with an inclination to excessive *rajas,* the other group collected ways of strengthening *sattva* when *tamas* is dominant. After the groups had discussed what they had collected in the plenum, further information on working in *sattva* was given by the course instructor. Again, the participants each wrote down one thing they wanted to change in their working habits over the next weeks.

Strengthening Will-Power

The sixth session dealt with the topic of will-power. A crucial element of dominant *sattva* is strong determination and self-control. The participants learned what will-power is and how it can be strengthened, based on current research on will-power (Baumeister & Tierney, 2011; Willmann, 2012). To assure that this would be applied in daily life, each participant chose a personal goal they wanted to work on and devised a concrete plan on how they would do this, based on what they had learned (typical goals were doing more physical exercise or yoga, stopping smoking or drinking coffee or work related goals).

Decision Making

Another motivational facet of *sattva* concerns choice behavior, which is described as wise, discriminating and certain. In the seventh session the participants were taken through two steps: first they developed a concrete, positive vision of their medium-term future, in order to connect themselves to their goals, in the background of which important decisions are made. Then, we went through a strategy for resolving ambivalence and inner conflicts (Miller & Rollnick, 2002), which each participant applied to an inner conflict they were facing at the moment.

Sattvic Social Behavior

In session eight, the participants practiced active listening and increased their sensibility for communication by learning about the four aspects of messages (Schulz von Thun, 2004), in order to strengthen *sattva* in their behavior towards others.

Sleep, Diet and Physical Exercise

After sessions two, three and four the participants received short handouts that informed them about general facts concerning sleep hygiene, a healthy diet and physical exercise, respectively.

4.5 Research Questions

Because of the scarcity of studies on the topic, our main research question was a very broad one: does this training increase *sattva* and decrease *rajas* and *tamas*? In addition, we wanted to explore in which behavioral aspects (cognition, emotion, motivation etc., see Table 1) the *gunas* changed more or less than in others. Furthermore, we were interested in changes in other related variables. We hypothesized that the training would increase psychological and physical well-being and self-regulation, whereas perceived stress would decrease. We had no concrete hypotheses concerning change in work-engagement and character traits, and investigated change in these variables exploratively. Work-engagement has some similarities to *sattva*, like mental resilience and vitality during work, but there are also connections to *rajas* such as not being able to detach oneself from work. The *gunas* are sometimes seen more as character traits, so the change of other character traits was of explorative interest.

4.6 Methods

4.6.1 Design

Due to limited resources for this study, we chose an experimental design which would permit conclusions concerning causes-and-effects despite a small sample size (we were not sure exactly how small the sample would be and were counting on eventually only working with a few individuals). This is possible by single-case experimental designs which can be used for experiments with individuals and small groups. For this experiment we chose a multiple baseline design (Barlow, Nock & Hersen, 2008). In a multiple baseline design the intervention is administrated at time intervals. The dependent variables are measured regularly, beginning before the intervention. The manifestation of the dependent variables before the intervention is the “baseline”. The trend of the data after the intervention sets in shows whether or not the independent variable had an influence on the dependent variables. The specialty of the design is that it shows that the dependent variables only change after the intervention was administrated. The effect is replicated with each individual or group.

Confounding variables are controlled for because the intervention starts at different times for each individual or group. Multiple baseline designs also employ the important principle of randomization that controls confounding variables in classical experiments. However, instead of randomizing across persons, in multiple baseline designs the randomization is across time. If the same effects can be observed in the dependent variables, despite of different baseline lengths (due to different starting times of the intervention), the researcher can conclude that the intervention is the cause for the change in the dependent variables.

Our study included four groups which started filling out a daily protocol eight days before the first group went through the first session of the training. The other groups each started one week after the respective previous group. The daily protocols, adapted from the Tri-Guna Scales (TGS, Puta & Sedlmeier, 2015) captured the three *gunas* (see section 4.6.2 for further detail). Furthermore, we measured the *gunas* with the complete TGS, well-being, work-engagement, perceived stress, self-regulation and the Big Five before, in between and three times after the intervention – after the last session of the last group and two times as follow-ups, first after three months and finally again after six months. The course instructor was the same person in all groups, a psychologist trained in applied health psychology. Ethical approval for this study was granted by the Institutional Review Board of the Technical University of Chemnitz. All participants provided written informed consent.

4.6.2 Inventories

We used the following inventories to measure the *gunas*, well-being, work-engagement, perceived stress, self-regulation and the Big Five.

Tri-Guna Scales

At the pre-, mid- and post-measurements *sattva*, *rajas* and *tamas* were measured with the Tri-Guna Scales (Puta & Sedlmeier, 2015). The inventory consists of 120 items and nine scales which each have three subscales (one for each *guna*). In a sample of 455 participants Cronbach's α was above .7 for all scales except three that are above .66 (*sattva cognition*, *tamas cognition*, *tamas style of working*). Factorial and criterion validity are validated.

A short version of the scales was compiled for the daily *guna* ratings. One of the items with the highest factor loadings was chosen from seven of nine scales. In order to avoid that the daily protocol would get too long, we chose to only include the seven scales that were hypothesized to be most variable across time (*cognition*, *style of working*, *emotion*, *motives*, *level of activity*, *volition* and *social behavior* – excluding *spirituality* and *health and health behavior*). The items were adapted slightly so that the wording was applicable on a day-to-day basis (rather than longer time periods). The full daily protocol can be found in appendix 4.11.7.

Psychological Well-Being

Psychological well-being was measured by two scales: the Habitual Subjective Well-Being Scale (HSWBS, Dalbert, 2010) and the Well-Being Scales for Measuring Present and Habitual Sentiment (BFS, Abele-Brehm & Brehm, 2003). The Scale of Habitual Well-Being measures subjective well-being with 13 items forming two scales: the scale *general life-satisfaction* and the scale *mood level*. The retest-reliabilities of both scales were above .8 for young adults and the internal consistency was above .8 in all samples (Dalbert, 2003). The construct validity is confirmed both in regard to factorial and criterium validity.

The BFS consist of eight scales: *activation*, *cheerfulness*, *calmness*, *agitation*, *shiftlessness*, *anger*, *depression* and *thoughtfulness*. The instruction either requests for rating present or habitual well-being. In this study the participants were requested to rate their habitual well-being (which gives the last week as the timeframe of reference). Since the scale *thoughtfulness* measures a neutral point in well-being (between arousal on the one hand and positive vs. negative mood on the other) which has no theoretical connection to the *gunas*, it was not used. With the exception of this scale, the internal consistencies lie above .8 (Abele-Brehm & Brehm, 2003). Studies examining the factorial, convergent and discriminative validity speak for a high validity of the scales (Abele-Brehm & Brehm, 1986).

Physical Well-Being

Physical well-being was measured by the Inventory for Measuring Physical Well-Being (FEW 16). The FEW 16 consists of four scales (which each consist of four items): *resilience*, *vitality*, *ability to enjoy* and *calmness*. The internal consistencies of the total scale and the subscales lie above .8 and the retest-reliability in a student sample lie above .7 (Kolip & Schmidt, 1999). The scales were formed by factor analysis and correlations of the total scale with relevant criteria are medium (r = .34 to .57).

Perceived Stress

Perceived stress was measured by the German version of the Perceived Stress Questionnaire (PSQ, Fliege, Rose, Arck, Levenstein & Klapp, 2001). The questionnaire consists of 20 items and four scales: *worries*, *tension*, *pleasure* and *demands*. The scales were constructed by an exploratory factor analysis. In the examined sample the internal consistencies lay above .8 and convergent and criterium validity are considered as verified.

Self-Regulation

Self-regulation was measured with Schwarzer's (1999) self-regulation scale which consists of ten items (see appendix 4.11.8). For two samples Cronbach's α was .82, and in another sample the internal consistency was .81. Scale scores are connected to procrastination, self-efficacy and perceived stress.

Work-Engagement

Schaufeli, Salanova, González-Romá & Bakker (2002, p. 74) define work-engagement as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption." Work-engagement was measured with the German short version of the Utrecht Work-engagement Scale (UWES-9, Schaufeli, Bakker & Salanova, 2006). The scale consists of nine items which measure the three dimensions of work-engagement – vigor, dedication and absorption. The internal consistencies (Cronbach's α) of the scales of the German version lie above .7, for the total scale above .85. The factorial validity has been validated by confirmatory factor analysis.

Big Five

The five personality traits agreeableness, conscientiousness, emotional stability, extraversion and openness to experience were measured by the German version of the Ten-Item Personality Inventory (TIPI-G, Muck, Hell & Gosling, 2007). Muck et al. (2007) demonstrate that the TIPI-G can be used as a valid short version of the NEO-PI-R. Reliability coefficients are lower than usual, nevertheless acceptable in the face of the high content validity of the inventory and its shortness. Goodness of fit indices are good compared to the confirmatory factor analyses of other Big Five inventories.

Motivation, Satisfaction and Transfer

To control for lacking motivation for, satisfaction with or application of the training we measured these variables with short questions at the first post measurement. The participants were asked to rate their motivation for and satisfaction with different aspects of the training (see appendix 4.11.6) and how often they applied the core techniques the training taught them (see appendix 4.11.2). One question on the daily protocol inquired whether or not they had practiced the mantra meditation that day. Overall, motivation for, satisfaction with and transfer of the training were satisfactory and didn't compromise the study.

4.7 Participants

38 participants were recruited through a Facebook add and flyers which were distributed in yoga centers in Berlin. They were required to be at least 18 years old and to neither take psychotropic drugs, nor currently attend psychotherapy. Five participants dropped out of the study before the first training session, four after the first training session and five later during the training, leaving 24 participants that stayed in the study up to the end. The participants that stayed after the first training session, but dropped out later during the training, reported reasons other than the training itself for dropping out (unexpected workloads and sickness). Of the 24 participants that remained, five participants were male, 75% had a high school diploma ("Abitur") and 46% had completed a college education. Half of the participants worked full hours, 13% were unemployed, while the remaining worked half days or chose the category "other". Furthermore, there was a remarkably high rate of 58% free-lancers amongst them. All 24 participants had had some pre-experience with meditation, 20% even meditating daily, and the amount of yoga pre-experience of the participants was quite variable – ranging from daily to never (see Figure 1). The participants reported having been highly motivated for and satisfied with the training at the first post-measurement (see appendix 4.11.6).

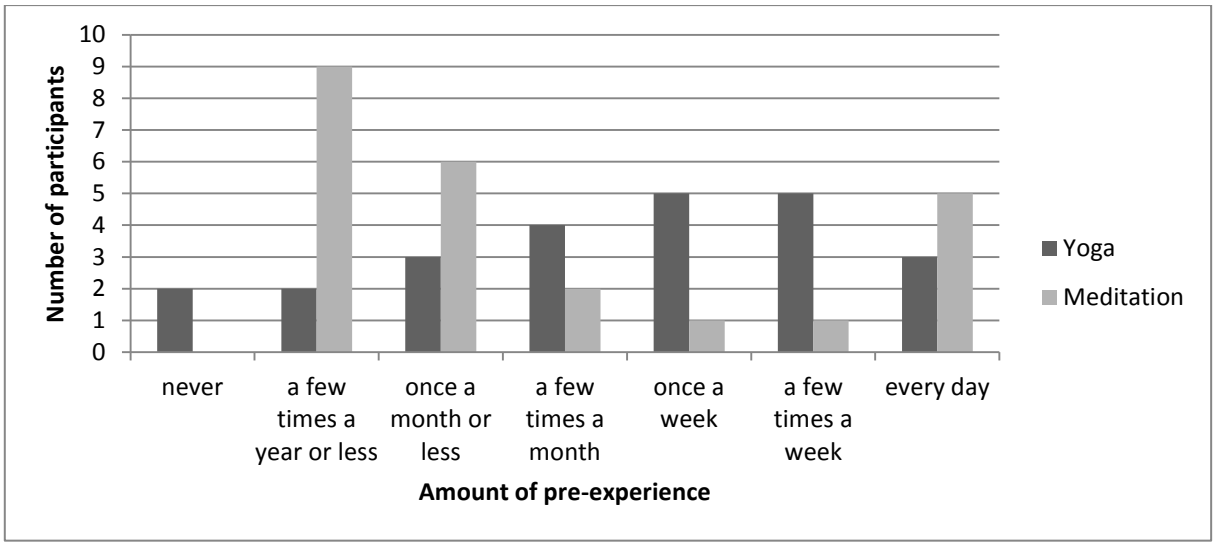

Figure 1 Pre-experience of the Participants with Yoga and Meditation

4.8 Data Analysis

In both the data from the daily protocols and the pre-, mid- and post-measurements about 5% of the data (of all items and persons) were missing. For the analysis of the daily protocols the missing data was not filled in by missing data replacement procedures since tha applied data analytical strategies did not require the data to be absolutely complete. In order to analyze the pre-, mid- and post-measurements, however, the missing data was filled in by SPSS's (version 22) expectation maximization procedure The data were replaced in separate procedures for each subscale. Little's MCAR test (Little, 1988) indicated that all missing data was missing randomly for all scales and subscales except *rajas health and health behavior*. Since the data were missing at the same random points for all 27 subscales (if a study participant had not participated in one of the five measurements, he or she had not filled out any of the scales for that particular measurement time) and Little's MCAR test confirmed the random nature of the missing data points for 26 of the 27 subscales, the exception of the significant MCAR test for one of the subscales should not be critical.

Of the 24 training participants one did not participate in the three post-measurements, but submitted daily protocols (#22) and one did not submit daily protocols, but participated in the pre-, mid- and post-measurements (#24). Thus, both the data analysis for the pre-, mid- and post-measurements and daily protocols consisted of 23 individuals in total.

In order to analyze the pre-, in between and three post-measurements of the comprehensive scales, we performed a contrast analysis across all study participants. A contrast analysis (Sedlmeier & Renkewitz, 2013) is a special form of an analysis of variance (ANOVA) that – as opposed to ANOVA which only allows for testing omnibus hypotheses – facilitates testing specific hypothesis about the pattern of the data. This is specified by contrast weights, by which the raw data is weighed, resulting in a measure of the goodness of fit of the actual pattern of the data and the hypothesized data pattern (called *L*-values). For the variables of this study two possible data patterns could be expected. First, for variables that were expected to increase, the data could be low in the beginning, better at the mid-measurement and stably larger at the post-measurements, thus contrast weights of -5 for the pre-measurement, -1 for the mid-measurement and 2 for each of the three post-measurements were chosen for this alternative. Alternatively, the data could be low at the beginning with an immediate training effect at the mid-measurement that remained stable for the three post-measurements. Contrast weights of -4, 1, 1, 1 and 1 were assigned to the measuring times for this alternative of an expected data pattern. For both expected data patterns the algebraic signs of the contrast weights were reversed for variables that were expected to decrease. A single-

group *t*-test over the mean of the *L*-values revealed the goodness of fit for the whole sample. Regarding the *t*-tests, the small sample size of this study should be taken into consideration – especially for the significance of small to medium effects. G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) reveals a power of only 58% for the effect-size d = .4 with a sample of 23 participants and 40% for a d = .3. Therefore, even in the case that the training is in fact effective for a change in a given variable to a small to medium extent, the *t*-test would remain non-significant. Cohen's recommendation (Bortz & Döring, 2002) of a power of 80% for most social-scientific studies is only guaranteed for effects above d = .53 for a *t*-test with a study sample of 23 persons.

Finally, the *t*-values were transformed into the effect-size *g* according to the formula: $t/\sqrt{N}$. *g* is interpreted similarly to *d* (with .2, .5 and .8 indicating small, medium and large effects), although it tends to be slightly smaller. Due to the two different possible contrasts, two *g*-values were calculated for each variable, *g1* represents the first contrast (-5, -1, 2, 2, 2) and *g2* the second (-4, 1, 1, 1, 1).

Following the suggestion of Parker, Vannest, Davis and Sauber (2011) the data of the daily protocols was analyzed by calculating Kendall's τ ("tau") as a numeric effect-size. This corresponds to the proportion of nonoverlapping data points minus the proportion of overlapping data points and can be interpreted as nonoverlap between the baseline and intervention phase or the percentage of data that improved (Parker et al., 2011). Tau's range is from -1 to 1. Although it is likely that τ-values have a different meaning in single-case research (just as Parker and Vannest (2009) have shown for another effect-size in single-case research (NAP)), as a rough interpretation we used the convention of values above .1, .3 and .5 indicating small, medium and large effects, respectively. The calculations were done with the online calculator developed by Vannest, Parker and Gonen (2011). For easier interpretation the daily protocol data was inverted for *rajas* and *tamas*, so that an improvement in either one of the three *gunas* is indicated by a positive τ-value.

Tau was calculated first for the averaged daily protocol values for each of the four groups and then for each of the 23 individuals separately. Only participants that had filled out the daily protocol for the entire time of the study (with only data of random single days missing) were included in their respective group average (Some participants had stopped submitting daily protocols weeks before the training ended.). Group 1 included participants 1, 2, 4 and 6; group 2 participants 8, 9, 11 and 12; group 3 participants 13 and 14 and group 4 participants 15-21 and 23. The disproportionate study group sizes was an effect of the study drop outs.

4.9 Results

Research Question 1: Did the training increase *sattva* and decrease *rajas* and *tamas*?

Three different effect-sizes give an answer to research question 1 which will be reported here:

a) *g1* and *g2* from the contrast analysis,

b) the τ-values from the analysis of the multiple baselines of the four study groups,

c) the τ-values resulting from the combination of the τ-values of the analysis of the baselines of the individuals and

d) the τ -values of the individual participants.

a) *g1* and *g2* from the contrast analysis

both *g1* and *g2* indicate large and highly significant intervention effects for all three *gunas* (N = 23):

sattva: g1 = .9 (t = 4.3, p < .001), *g2* = .89 (t = 4.29, p < .001),

rajas: g1 = .99 (t = 4.75, p < .001), *g2* = 1.03 (t = 4.92, p < .001),

tamas: g1 = .79 (t = 3.79, p < .01) and *g2* = .96 (t = 4.62, p < .001).

b) τ-values from the analysis of the multiple baselines of the four study groups

With the exception of *sattva* in group 1, all τ-values indicate significant change in the expected direction for all three *gunas* in all groups.

Group 1 (N = 4) showed the greatest decreases in *rajas* (τ = .72, p < .001) and *tamas* (τ = .85, p < .001). *Sattva* improved, however not significantly (τ = .39, p = .074). The effects are large for *rajas* and *tamas*, the non-signifcant effect for *sattva* is medium. Figure 2 depicts the course of the averaged daily *guna* values for each *guna* before the intervention ("baseline"), during the intervention ("treatment") and the following weeks ("follow-up").

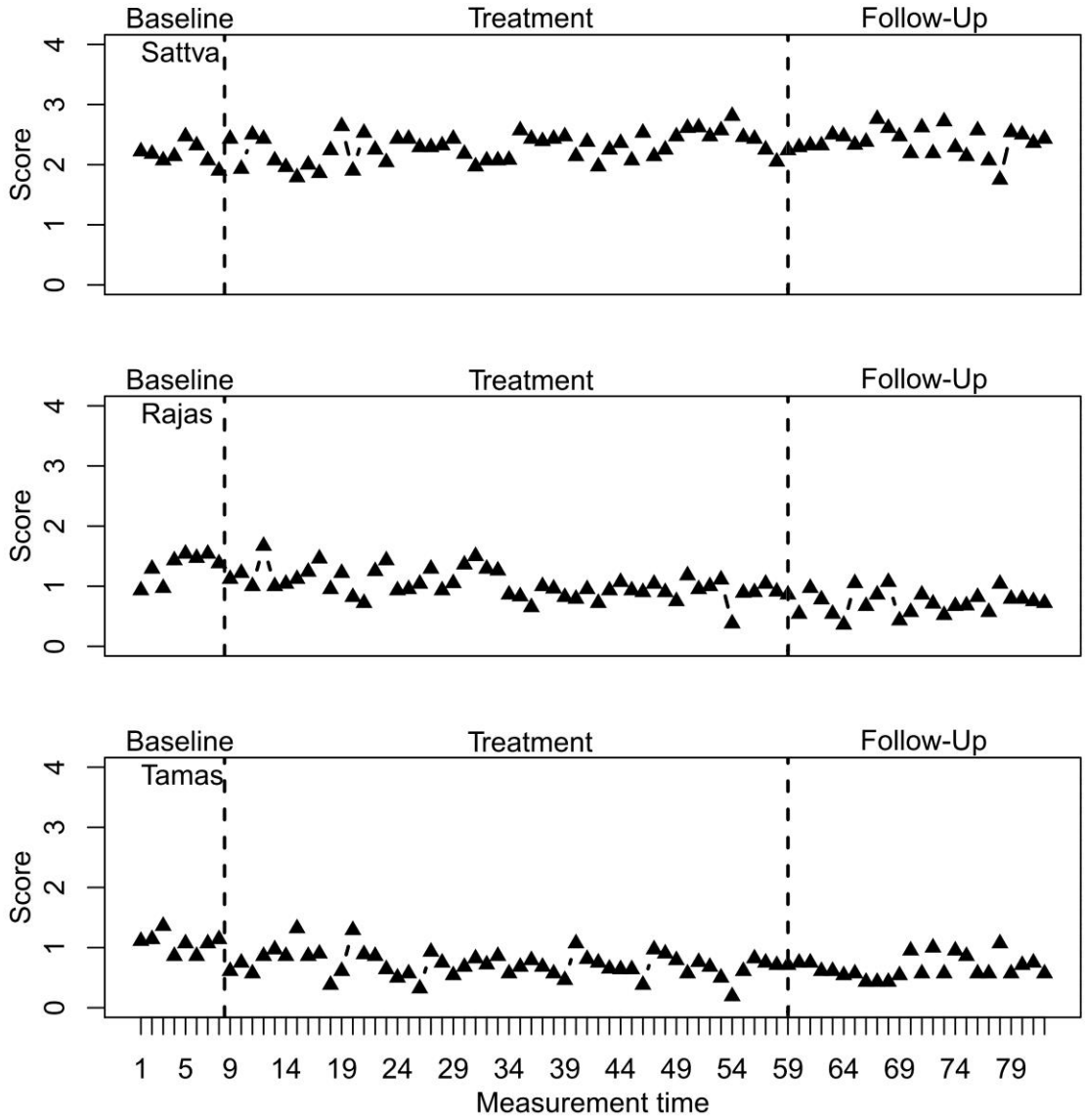

Figure 2 Daily Protocol Data Group 1 (N = 4)

All three *gunas* showed significant change in the expected directions in group 2 (N = 4) (see Figure 3). *Sattva* increased with τ = .67 (p < .001), *rajas* decreased with τ = .67 (p < .001) and *tamas* with τ = .66 (p < .001). These effects all fall into the category of a large effect (τ > .5).

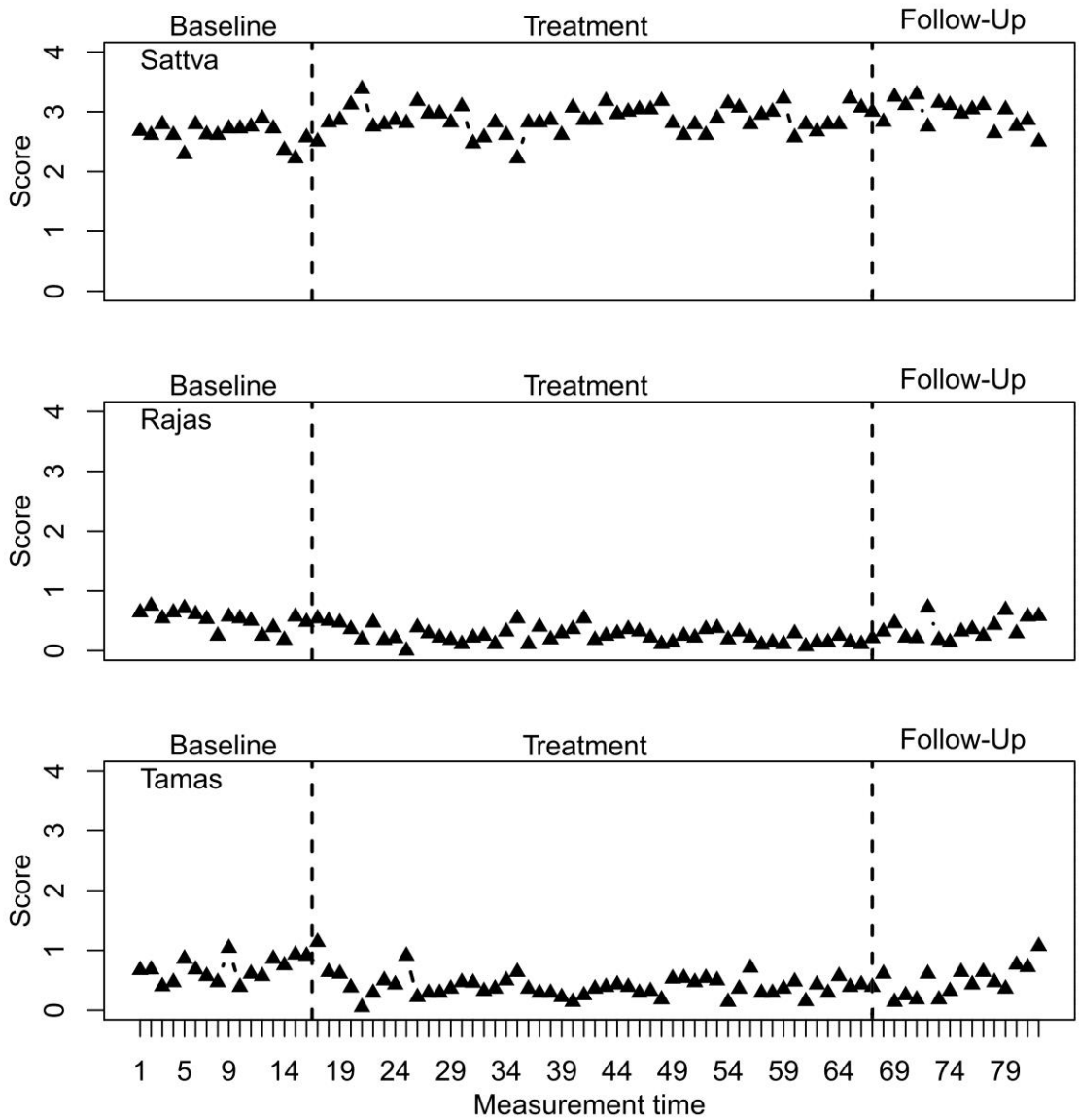

Figure 3 Daily Protocol Data Group 2 (N = 4)

In group 3 (N = 2, see Figure 4) *sattva* increased with τ = .63 (p < .001), *rajas* decreased with τ = .51 (p < .001) and *tamas* with τ = .49 (p < .001). Both the effect for *sattva* and *rajas* is large, for *tamas* it is medium.

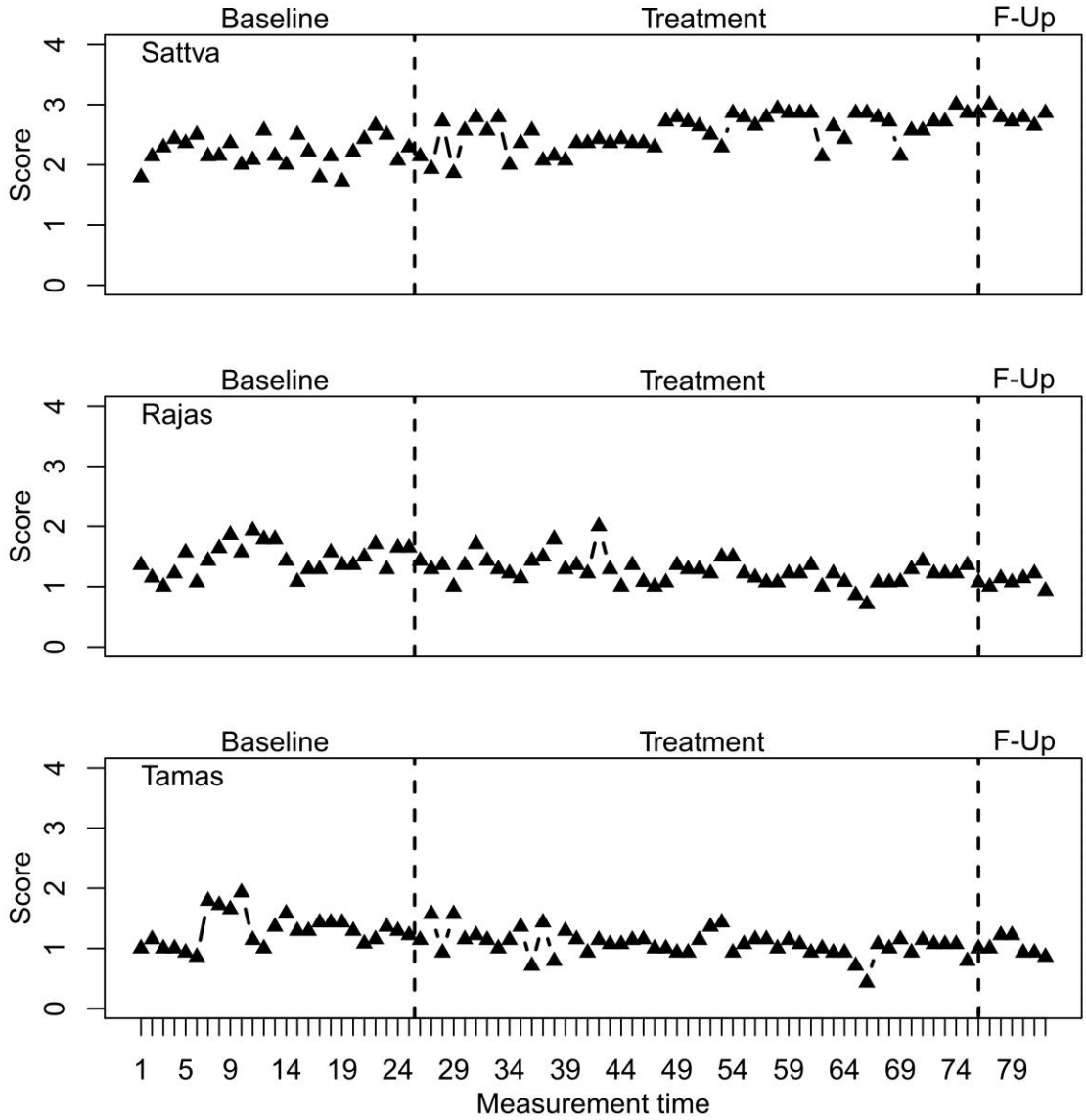

Figure 4 Daily Protocol Data Group 3 (N = 2)

Also in group 4 (N = 8, see Figure 5) all three *gunas* showed significant change in the expected directions. *Sattva* increased with τ = .48 (p < .001), *rajas* decreased with τ = .62 (p < .001) and *tamas* with τ = .57 (p < .001). For group 4 the effects are large for *rajas* and *tamas* and medium for *sattva*.

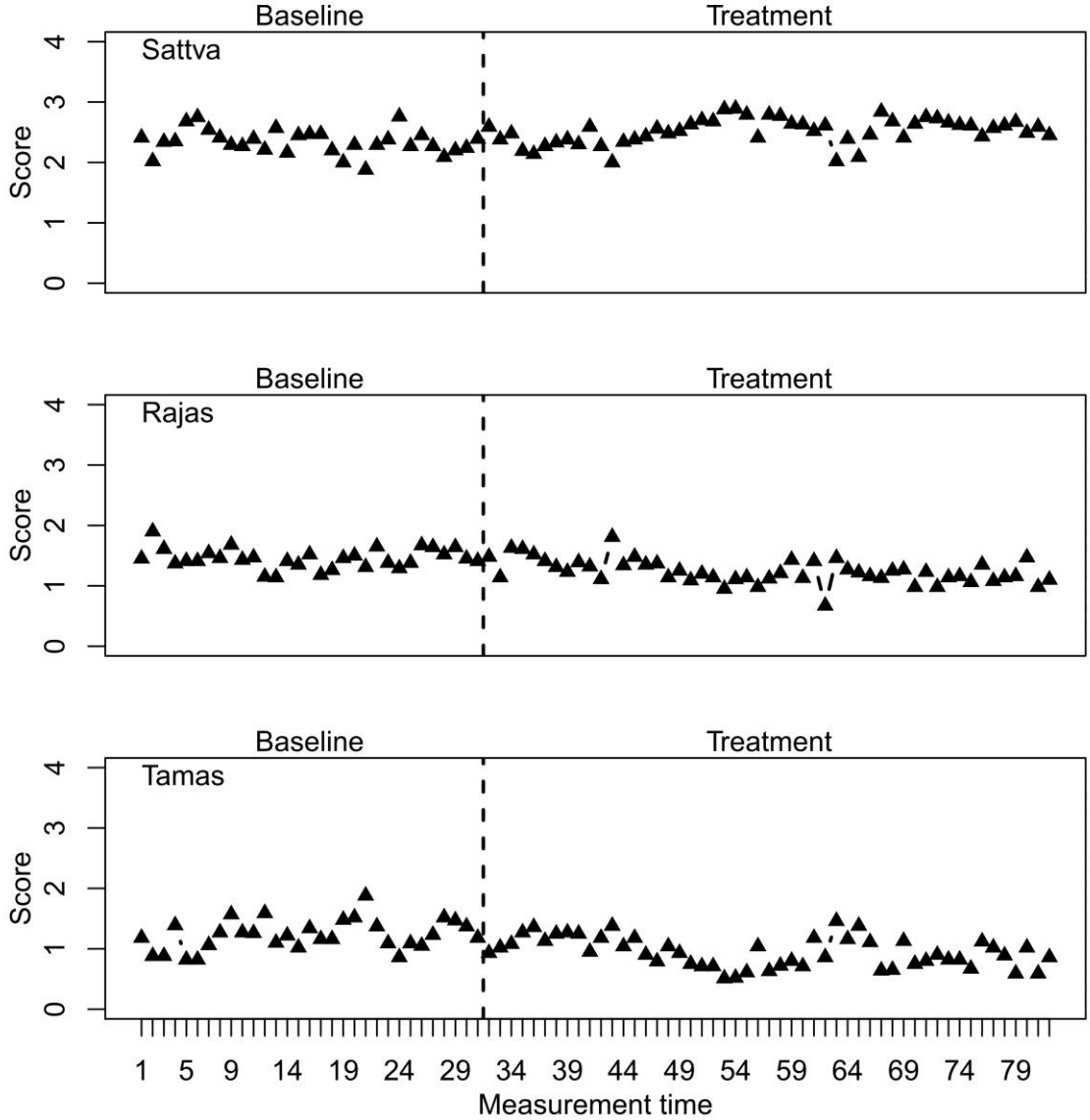

Figure 5 Daily Protocol Data Group 4 (N = 8)

c) τ-values from the combination of the τ-values of the analysis of the baselines of the individuals

The combination of the individual τ-values of the scale sums of the items of the daily protocol indicates medium intervention effects for all three *gunas* (N = 23, with *sattva* and *tamas* lying slightly below the cut-off value of .3 to be categorized as a medium effect):

sattva: $\tau = .29$ ($p < .001$)

rajas: $\tau = .31$ ($p < .001$)

tamas: $\tau = .28$ ($p < .001$)

Figure 6 summarizes the individual τ-values in a boxplot diagram. The *guna*-values of study participants 5, 10 and 19 are marked individually, since some of their scale values are drastically different form the rest of the participants' values (these values are "outliers").

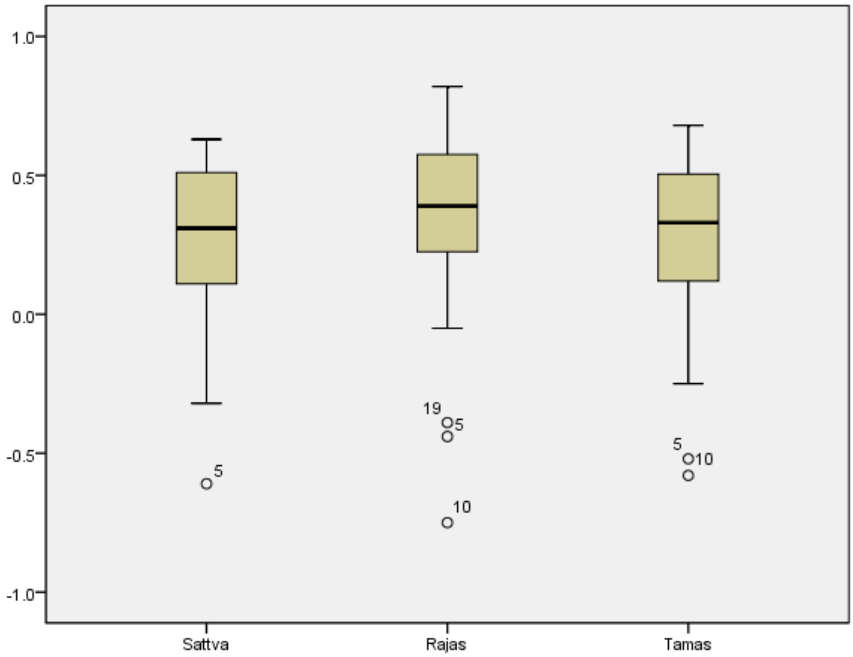

Figure 6 Boxplot Diagram of the τ-values from the Baseline/Intervention Comparisons of the Individuals (N = 23)

d) τ-values of individual participants

Looking at the simple sums of participants in which the *gunas* changed significantly according to the individual τ-values (N = 23), *sattva* increased in 11 participants (and decreased in two), *rajas* decreased in 17 (and increased in two) and *tamas* in 14 (and increased in one). All in all, 19 participants improved in at least one *guna*, one participant showed no significant change and three worsened in at least one *guna*.

In the following we report two participants (Jana and Katrin[4]) that showed typical baseline-charts for our study sample (the effect-sizes for the change in these charts correspond

[4] The names of the participants have been replaced by fictious names.

roughly to the median of the τ-values). Furthermore, we depict two participants that showed extreme progressions in their charts – Tim as an example of a strong positive change and Lea as an example for a strong negative change. (See appendix 4.11.2 for the charts of the other 19 participants.) The charts illustrate the progression of the *guna* scores before the training (baseline), during (intervention) and after (follow-up).

Typical example 1: Jana (#14)

Jana (age 43, group 3) participated in seven training sessions and meditated on two days out of three (32 times). Her baseline/intervention/follow-up chart (see Figure 7) shows a persistent improvement in all three *gunas*. The τ-values also indicate improvement for all *gunas* (*sattva*: $\tau = .63$, $p < .001$; *rajas*: $\tau = .3$, $p < .05$; *tamas*: $\tau = .33$, $p < .05$).

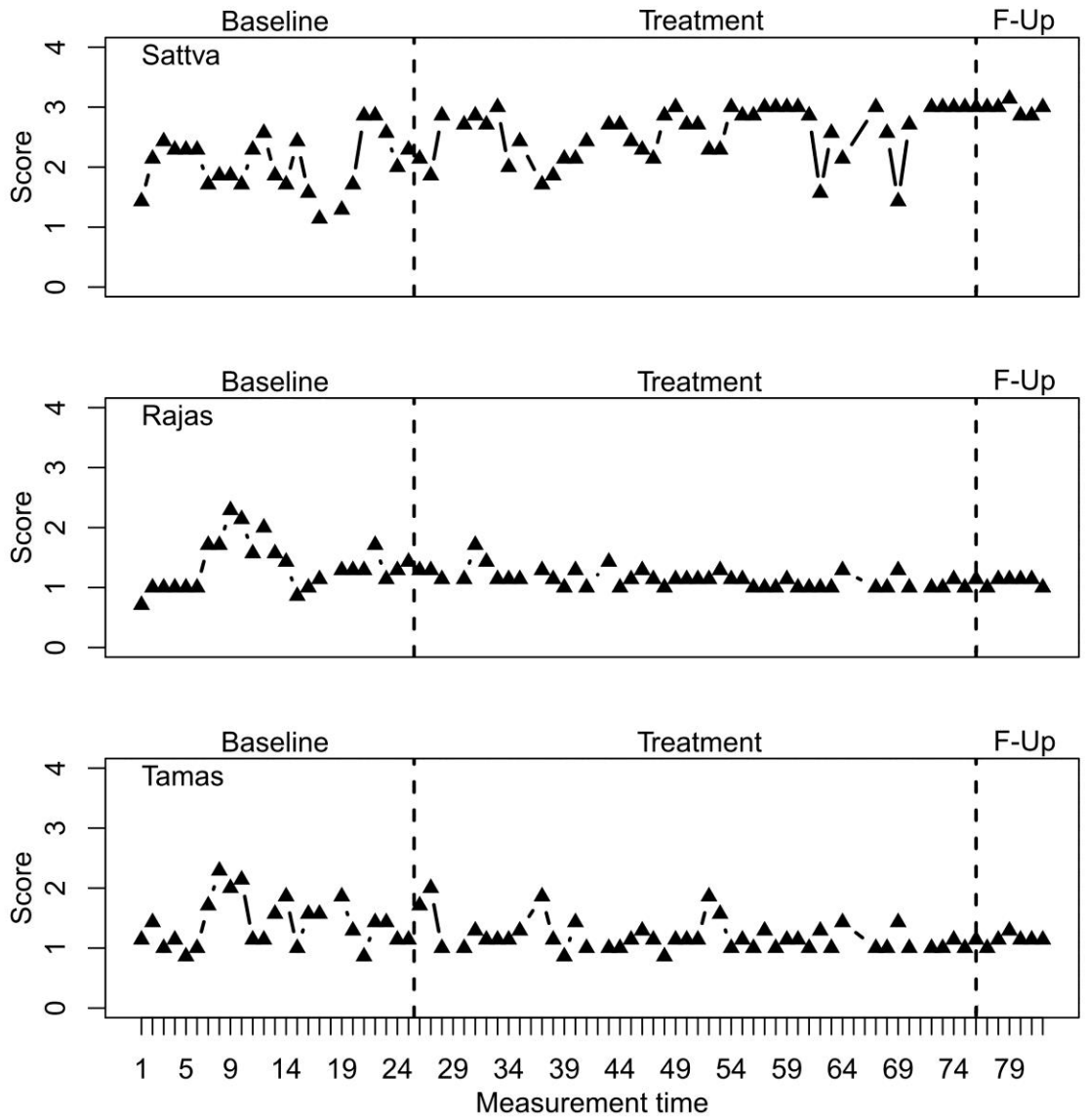

Figure 7 Daily Protocol Data Participant 14

Typical example 2: Katrin (#20)

Katrin (age 52, group 4) participated in seven training sessions, reported having applied the trained techniques once a week and meditated daily with a few exceptions (48 days). Her chart (see Figure 8) shows a steady trend of increased *sattva* and decreased *rajas*. *Tamas* first decreased, then came to a peak after the first half of the training and started decreasing again. The τ-scores reflect a general improvement for all *gunas* in the intervention phase (*sattva*: $\tau = .58$, $p < .001$; *rajas*: $\tau = .34$, $p < .05$; *tamas*: $\tau = .33$, $p < .05$).

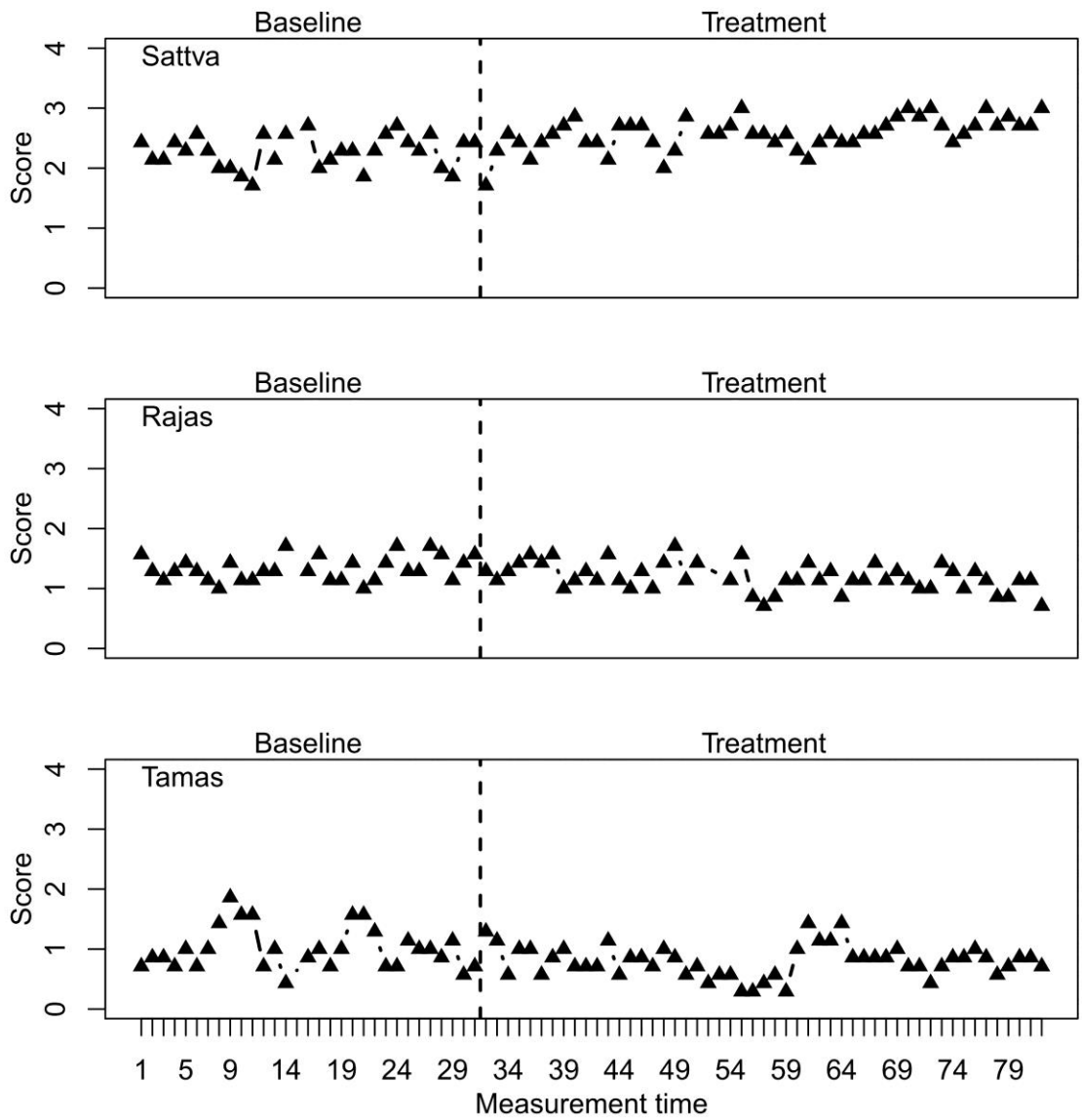

Figure 8 Daily Protocol Data Participant 20

Example for an extremely positive progression: Tim (#21)

Tim (age 46, group 4) attended all the training sessions and reports having applied the techniques every day on average. He meditated regularly (41 days) during the intervention phase. Tim's chart shows relatively astonishing changes (see Figure 9). He is one of the few participants whose *sattva* was not already the prominent *guna* during the baseline, still at the end of the intervention phase *sattva* became the dominating *guna*. This is reflected in the τ-scores: *sattva*: $\tau = .58$ ($p < .001$), *rajas*: $\tau = .37$ ($p < .01$) and *tamas*: $\tau = .56$ ($p < .001$).

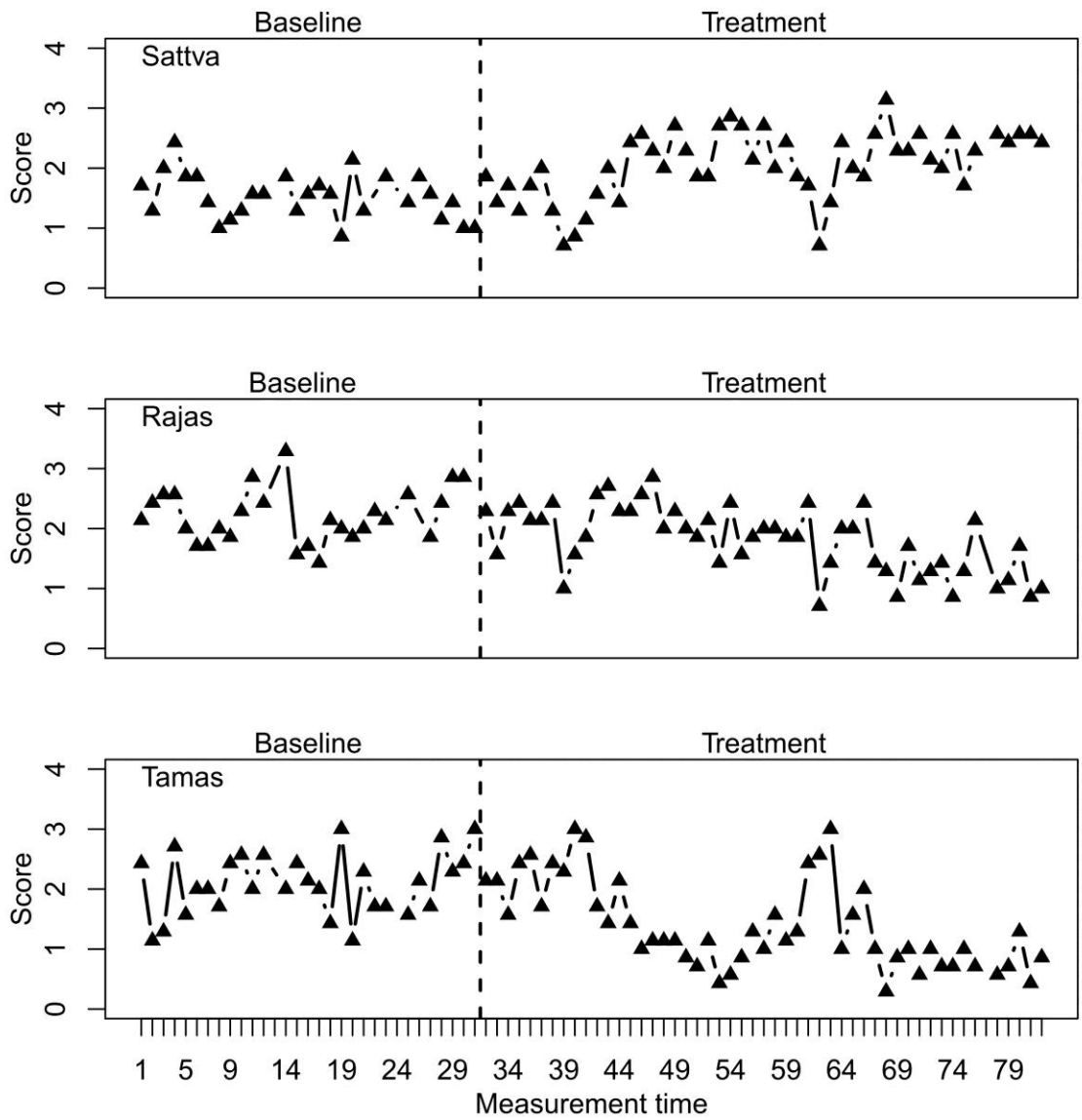

Figure 9 Daily Protocol Data Participant 21

Example for an extremely negative progression: Lea (#5)

Lea (age 47, group 1) participated in all eight training sessions. She meditated frequently, almost every day of the intervention, and reported having applied the other techniques from once to a few times. After the first half of the intervention Lea decided to divorce her husband, which affected her majorly for the rest of the training. Comparing baseline with intervention and immediate follow-up (see Figure 10), *tamas* increased (τ = -.52, p < .05) and *sattva* (τ = -.61, p < .05) decreased significantly.

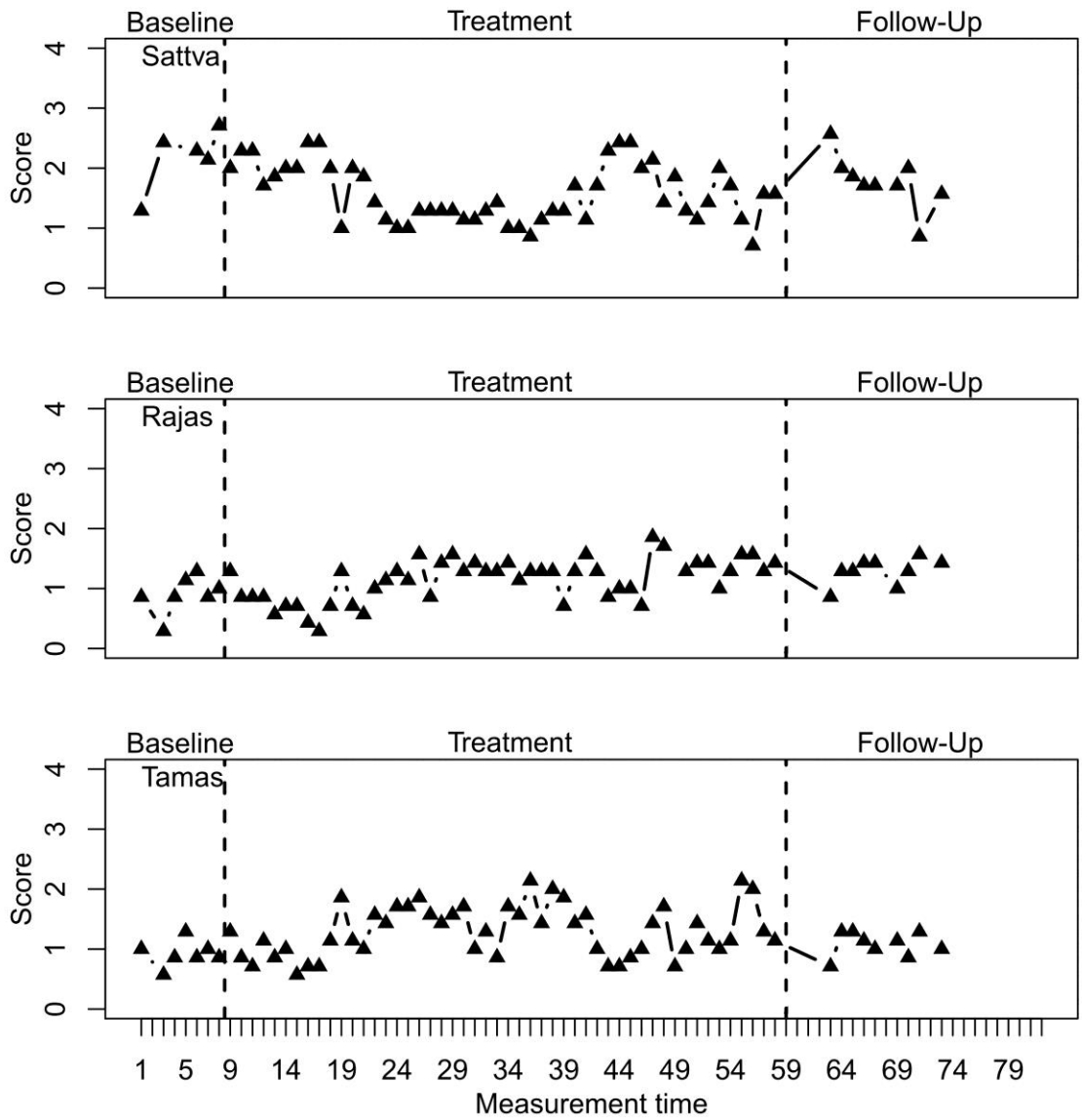

Figure 10 Daily Protocol Data Participant 5

Research Question 2: Which *guna* facets changed more or less than others?

Two different effect-sizes give an answer to research question two which will be reported here:

a) *g1* and *g2* from the contrast analysis and

b) the combined τ-values (across participants) for the seven items of the daily protocol.

a) *g1* and *g2* from the contrast analysis

Figure 11 depicts the *g*-values for the nine *guna* scales (see appendix 4.11.4 for the exact values and their corresponding *t*-values and significances). The *g*-values show that the greatest changes occurred on the scales *rajas cognition*, *tamas motives*, *rajas emotions*, *tamas style of working*, *sattva cognition* and *rajas health and health behavior*. The lowest changes occurred on the scales *rajas style of working* and *rajas activity level*.

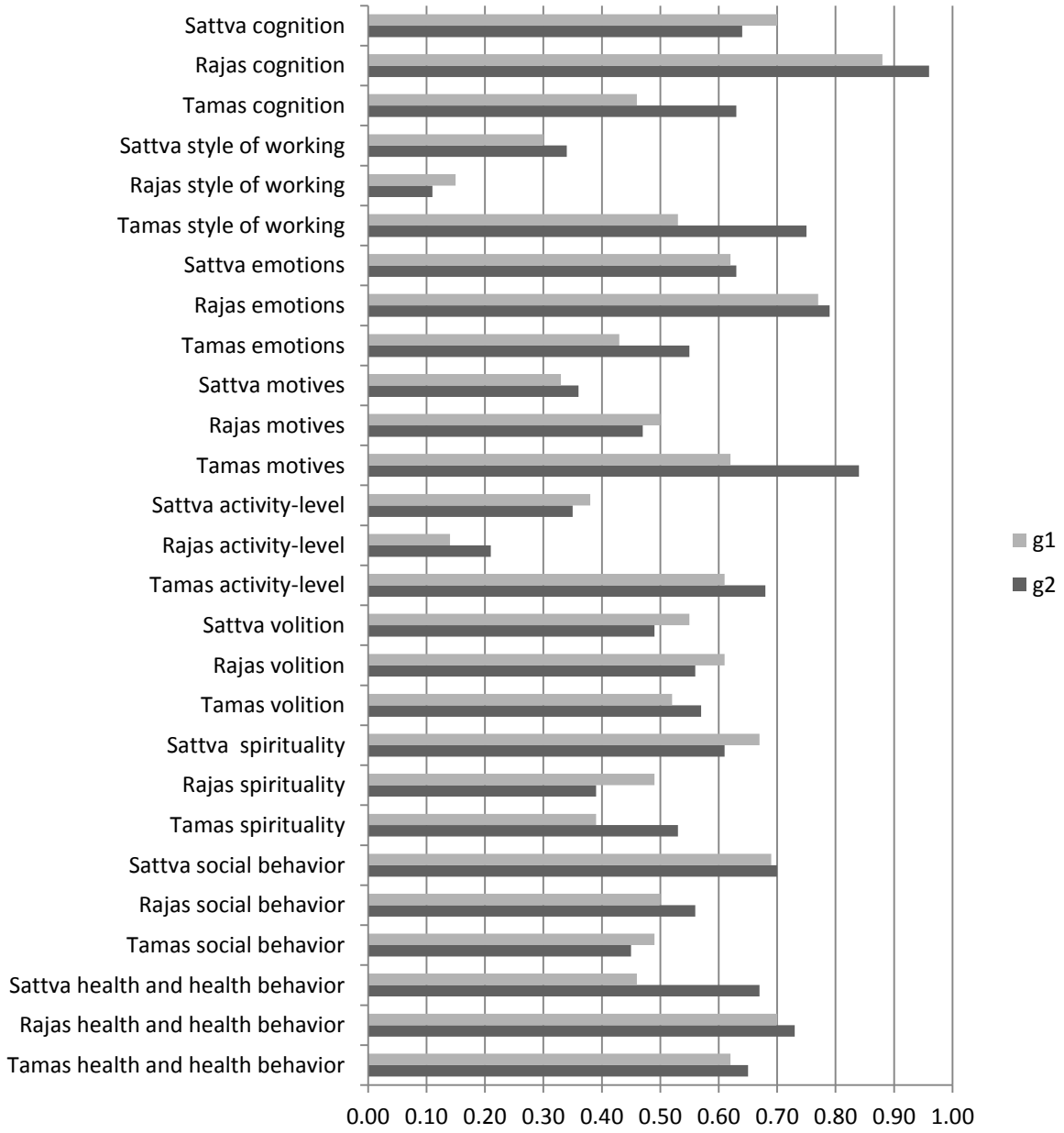

Figure 11 *g*-values for the Nine Guna Scales (N = 23), all effects > .45 significant with at least $p < .05$

b) combined τ-values for the seven items of the daily protocol

Figure 12 shows the combined τ-values (see appendix 4.11.3 for the exact values). The greatest changes in reference to τ occurred for the items measuring *tamas activity level*, *rajas motives*, *rajas emotions* and *sattva volition.* The least change occurred for *rajas volition*, *tamas emotions*, *tamas social behavior* and *tamas motives.*

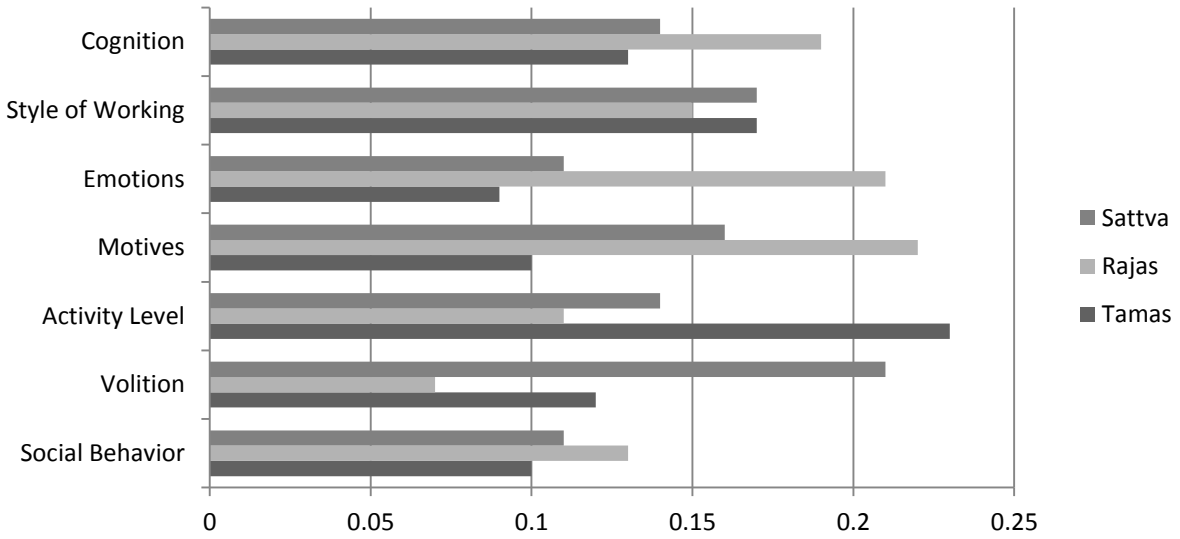

Figure 12 Combined Subject τ-values for the seven Items of the Daily Protocol (N = 23), all significant with at least $p < .05$

Research Questions 3: Did the training increase psychological and physical well-being and self-regulation? Did the training decrease perceived stress? Did work-engagement and/or character traits change?

The *g*-values from the contrast analysis for the other measured relevant variables in connection to the *gunas* are reported in Figure 13 (see appendix 4.11.4 for the exact values and their corresponding *t*-values and significances).

There are no *g*-values above .8 indicating large training effects for any of these variables. The greatest training effects were observed for an increase in calmness, physical well-being, vitality, self-regulation, general mood, emotional stability, ability to enjoy and emotional stability, and a decrease in worries.

All in all, general mood, self-regulation and physical well-being increased significantly, as well as one of the character traits (emotional stability). The perceived stress subscale *worries* also decreased significantly. Psychological well-being measured with the BFS did not increase significantly, neither did work-engagement, the other four character traits, or perceived stress in total.

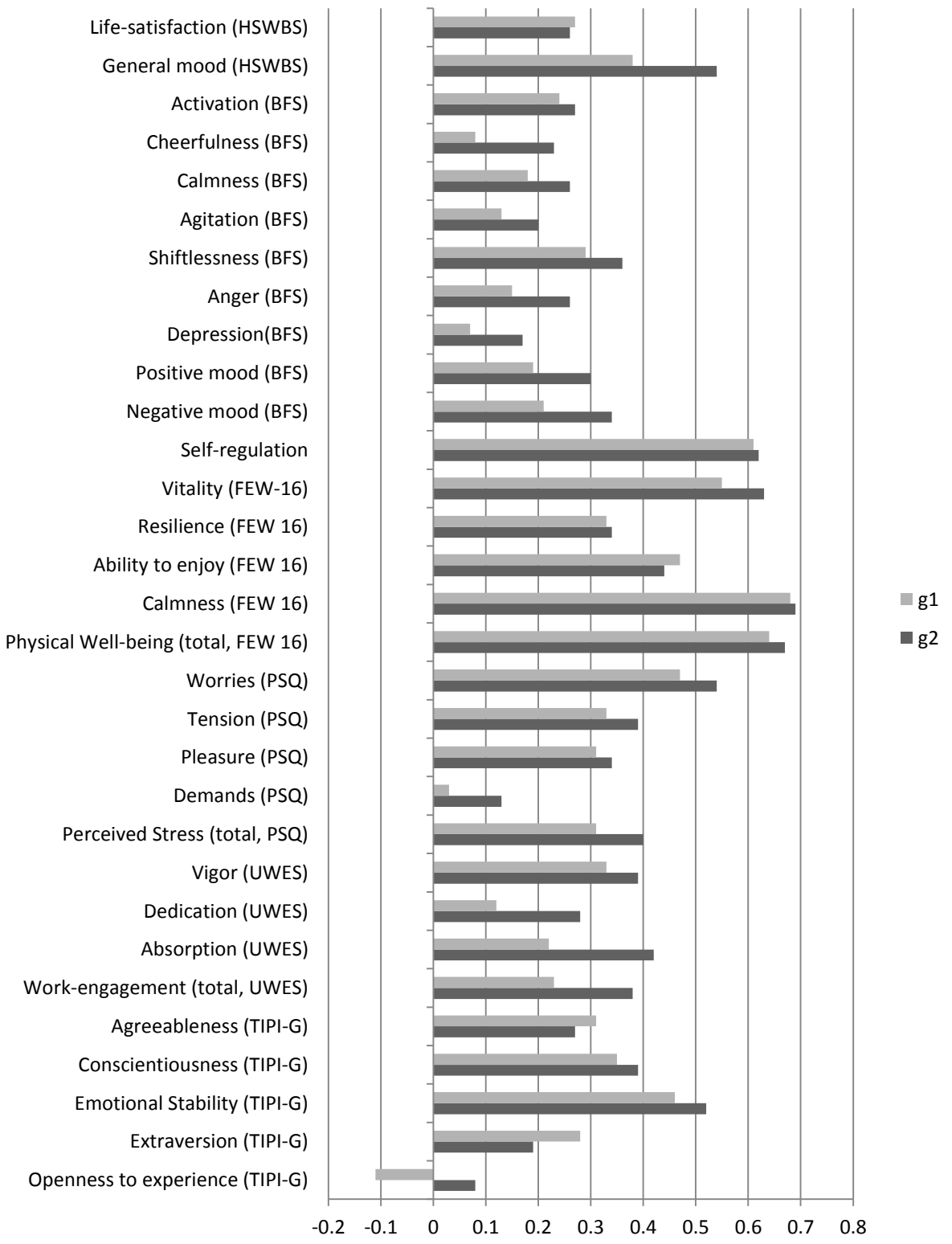

Figure 13 *g*-values for the Other Measured Dependent Variables (N = 23), all effects > .43 significant with at least p < .05

4.10 Discussion

The goal of this study was to test the effectiveness of a training consisting of a variety of interventions that were aimed at increasing well-being conceptualized as a high level of *sattva* and low levels of *rajas* and *tamas*. Considering the results, it is safe to say that the training was indeed effective.

The effect-sizes *g1*, *g2* and τ indicate medium to large training effects in regard to positive change in the *gunas*, lasting up to six months after the training. With the exception of *sattva* in group 1, the *gunas* improved in all four study groups and 19 of 23 participants improved in at least one *guna* (either by increasing *sattva* or by decreasing *rajas* or *tamas*).

There are differences in the amount of change across the different aspects of the *gunas*. Considering *g1* and *g2*, *guna* facets that changed most were the tendency to experience inner turmoil in thoughts and emotions (*rajas cognition* and *rajas emotions*), feeling hopeless and having difficulties making decisions (*tamas motives*), procrastinating (*tamas style of working*), the ability to accept the way things develop, even if it doesn't correspond to one's expectations and to focus on the positive aspects of a given situation (*sattva cognition*) and the ability to relax (*rajas health and health behavior)*. The lowest *g*-values were found for the tendency to work overly passionately and to overexert oneself (*rajas style of working* and *rajas activity-level*). The last result is surprising since the importance of energy management received a lot of emphasis and attention in the training – seemingly not enough still, at the face of how difficult it seems to be to stop working excessively.

Considering τ, the greatest changes occurred for inertia (*tamas activity-level),* desiring luxuries (*rajas motives),* feeling restless (*rajas emotions)* and a lack of will-power (*tamas volition).* The least changes were found for greed (*rajas volition)* and feelings of hopelessness (*tamas emotions).* For *g1* and *g2* there is a greater variability between the effect-sizes of the different *guna* facets, whereas all facets changed to a similar small to medium degree for the τ-values. These differences are reasonable considering that the *g*-values consist of data gathered over a much larger number of items and a longer time frame, allowing for more variability in the data. In general, this variation of effects across the facets of one *guna* is an example for the advantage of measuring the *gunas* differentially, rather than in a generalized way (Puta & Sedlmeier, 2015).

Regarding the other variables that were measured, psychological and physical well-being increased significantly, as well as self-regulation, the perceived stress subscale *worries*, and emotional stability. Other variables, such as life-satisfaction, other well-being subscales such as shiftlessness, activation and calmness, perceived stress, work-engagement,

conscientiousness and agreeableness also changed, but to a lesser degree, so that the power of the *t*-test is insufficient to bring about significant effects for this small study sample.

Previous studies have shown the correlation between *sattva* and well-being and *rajas* and *tamas* and psychological illness, respectively (Lakshmi Bhai, Murthy & Nagalakshmi, 1975; Stempel et al., 2006; Puta & Sedlmeier, 2015). Also, a few interventions (meditation, yoga and physical exercise) have been found effective for increasing *sattva* and/or decreasing *rajas* and *tamas* (Deshpande et al., 2008; Khema et al., 2011; Rani and Rani, 2009; Wolf & Abell, 2003). The results of this study support these findings and broaden them, since they demonstrate the effectiveness of a training that integrated different interventions, like meditation, cognitive restructuring, energy management etc.

Since the *guna* model addresses all major facets of human behavior, a training that aims at changing the *gunas* should ideally also offer a number of different strategies for increasing *sattva* and decreasing *rajas* and *tamas*. The training that was developed in the course of this study combines such a possible mix of interventions in a unique and new way, addressing all components of behavior (including motivation, volition and social behavior) and thereby going a step further than traditional stress-management. Still, the variety of strategies were connected by the golden thread of the *gunas*, so that participants could easily see the common theme weaving itself through the training. Remembering the message of three points – *sattva*, *rajas* and *tamas* – seemed to be easier for them, than it would be to recall countless bits of separate information.

Another new conclusion from this study concerns research methodology: the correspondence but not total similarity of the scope of change in aspects of well-being like physical well-being and positive mood and other variables related to the *guna*-model such as self-regulation and perceived stress and change in the *gunas* indicates the utility of a theory-guided use of measuring instruments developed particularly for the variables being investigated (Sedlmeier, Eberth & Puta, in press).

This study is not without limitations. The main limitation is the small sample size which doesn't allow for a robust testing of the significance of small to medium effects in regard to the *g*-values of the contrast analysis. Also, with more participants (or at least with the security of knowing that more than a handful of participants will participate right from the start), this study could have had a control group, which would have increased the validity of the design especially in regard to the elaborate pre-, mid- and post-measurements and resulting effect-sizes *g1* and *g2*. Although the multiple baseline design is a fully valid experimental design and the changes in τ suggest that the changes in *g* were also caused by the training and no

other confounding variables, the latter should of course be based on scientific evidence, which only a control group can provide. Therefore, especially in regard to the variables that were not measured within the baseline-design (out of economic reasons), generalizations should be made cautiously. Also, the study tested the effectiveness of a variety of interventions together, no conclusions can be made in regard to the change in the *gunas* for individual interventions. Finally, one participant (Lea) went through a divorce during the training and her baseline chart shows a strong decrease in her well-being. This example indicates that such a training is not suited as the only intervention for people undergoing critical life events.

This study is one of the first of few existing intervention studies aiming at a change in the *gunas* – much is left to be examined in future studies. Firstly, it would be desirable if these findings were replicated. Secondly, other study designs involving more participants could contribute to the evidence and furthermore shed light on the absolute amount of change that takes place and to what extent it is clinically relevant. Future research might also single out specific interventions and test their individual effect on the *gunas*. Another approach would be to conduct studies with the aim of gathering more insights into inter-individual effects of different interventions in regard to the *gunas*.

All in all, even though we are only at the beginning of understanding it fully, the *tri-guna* model seems to be a promising approach to furthering well-being and increasing our understanding of it.

4.11 Appendices

4.11.1 References

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4.11.2 Baseline Diagrams for Each Participant

The following charts illustrate the progression of the *guna* scores for each training participant before the training (baseline), during (intervention) and after (follow-up). The names have been replaced by fictious names. The τ-values are given for significant changes in the comparison of the *guna* values of the baseline phase and intervention/follow-up phase. (See appendix 4.11.3 for the τ-values for non-significant results and the single items of the daily protocol.)

Group 1

Manuela (#1)

Manuela (age 31) attended five training sessions. On average she reports having applied the techniques the training covered once a week. Manuela had already been practicing mantra meditation daily before the training and continued her practice. In the daily protocol data (see Figure 14) *rajas* (τ = .59, p < .05) and *tamas* (τ = .53, p < .05) improved significantly. *Sattva* did not improve significantly.

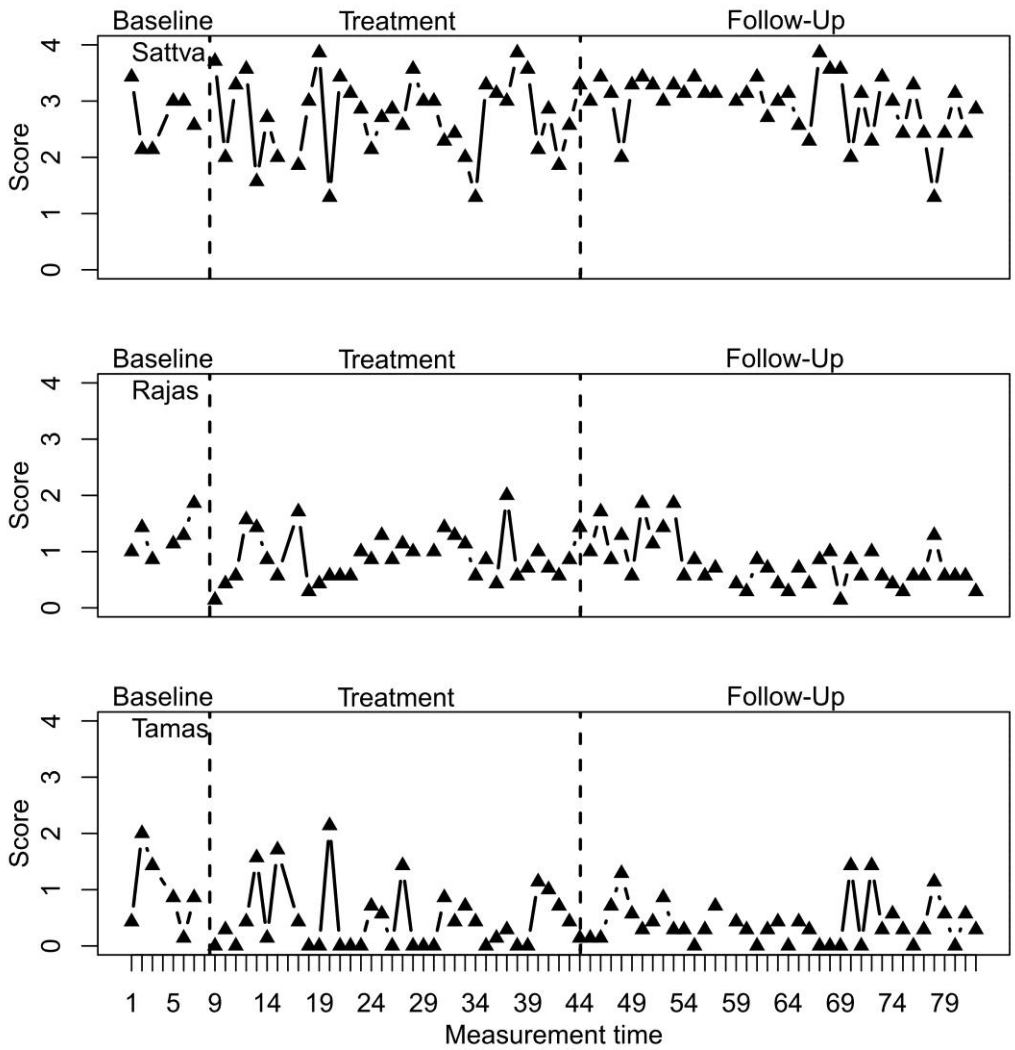

Figure 14 Daily Protocol Data Participant 1

Sarah (#2)

Sarah (age 44) attended six sessions. She reports having applied the discussed techniques relatively infrequently – between never and a few times. The session that particularly helped her was that on increasing *sattva* in relationships, the techniques of which she reported having applied once a week. Sarah had difficulties taking to the meditation, feeling that its effects depend on belief, and reports having practiced yoga once a week instead. Throughout the whole time (see Figure 15) the total scale values of neither *sattva*, nor *tamas* show significant changes, however *rajas* decreased significantly ($\tau = .46$, $p < .05$).

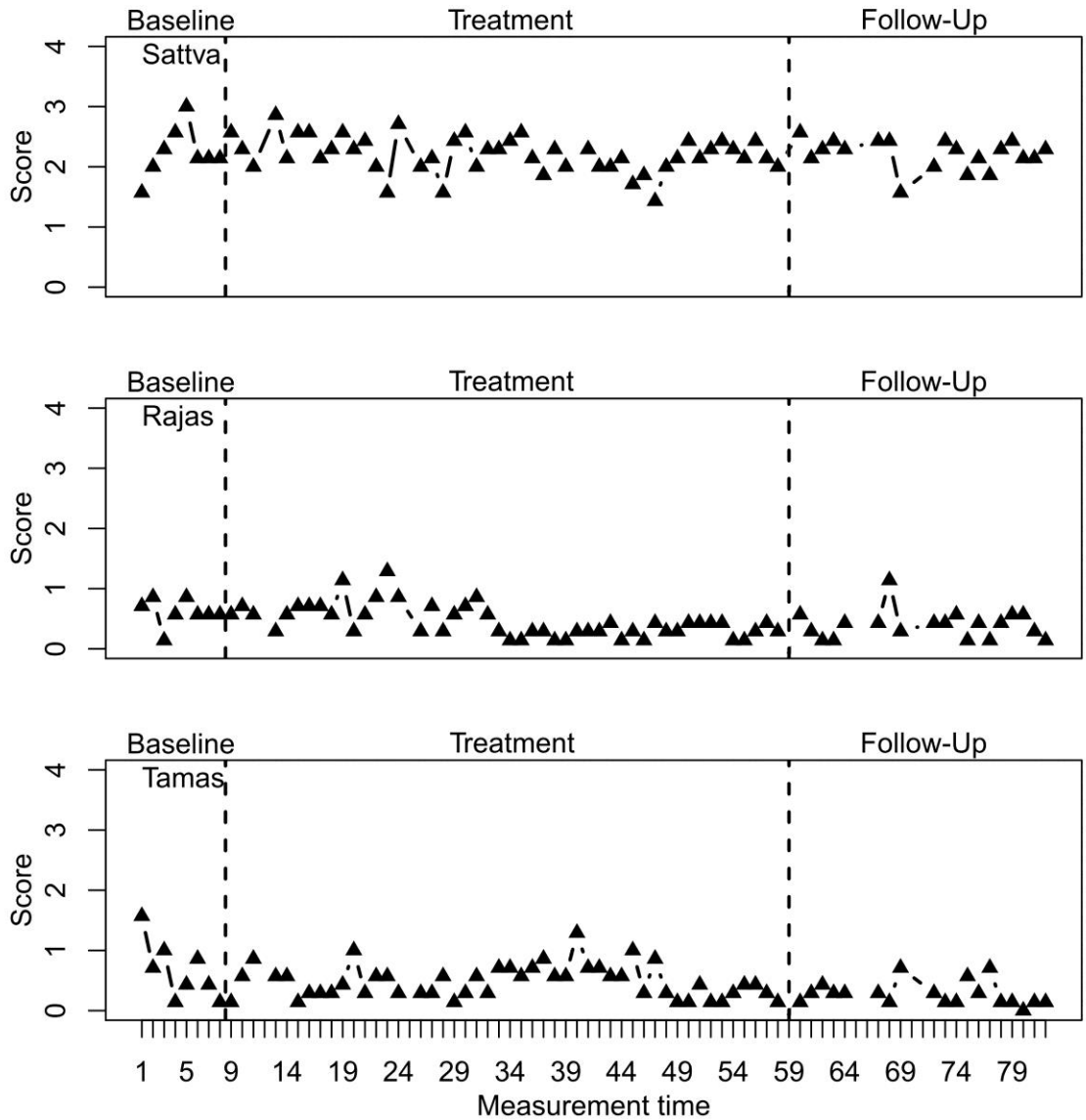

Figure 15 Daily Protocol Data Participant 2

Andrea (#3)

Andrea (age 29) was a highly motivated participant of seven sessions. Except for PMR (which was the least applied technique by all participants) she reports having applied all the techniques she acquired several times per week. Andrea stopped submitting daily protocols a month early, during the time that she filled them out she meditated 16 times, however she sometimes substituted the mantra meditation by breath meditation. There were significant improvements in *rajas* ($\tau = .46$, $p < .05$), and none for *sattva* and *tamas* (see Figure 16).

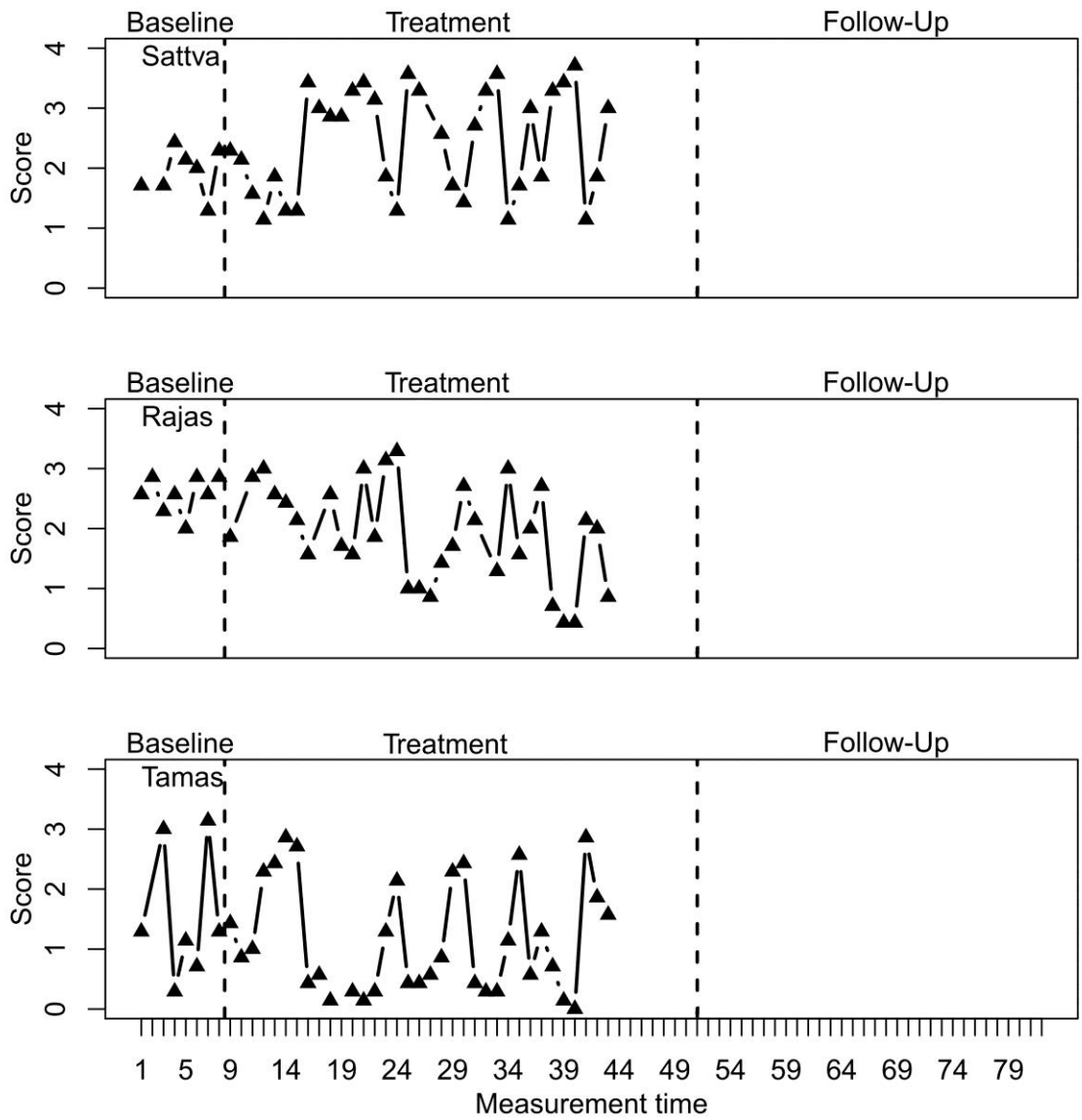

Figure 16 Daily Protocol Data Participant 3

Lars (#4)

Lars (age 50) attended seven sessions and on average applied the techniques once a week. He meditated on 16 days and especially appreciated the group mantra meditation at the beginning of each session. Lars' protocols (see Figure 17) show significant decreases of both *rajas* (τ = .68, p < .01) and *tamas* (τ = .68, p < .01).

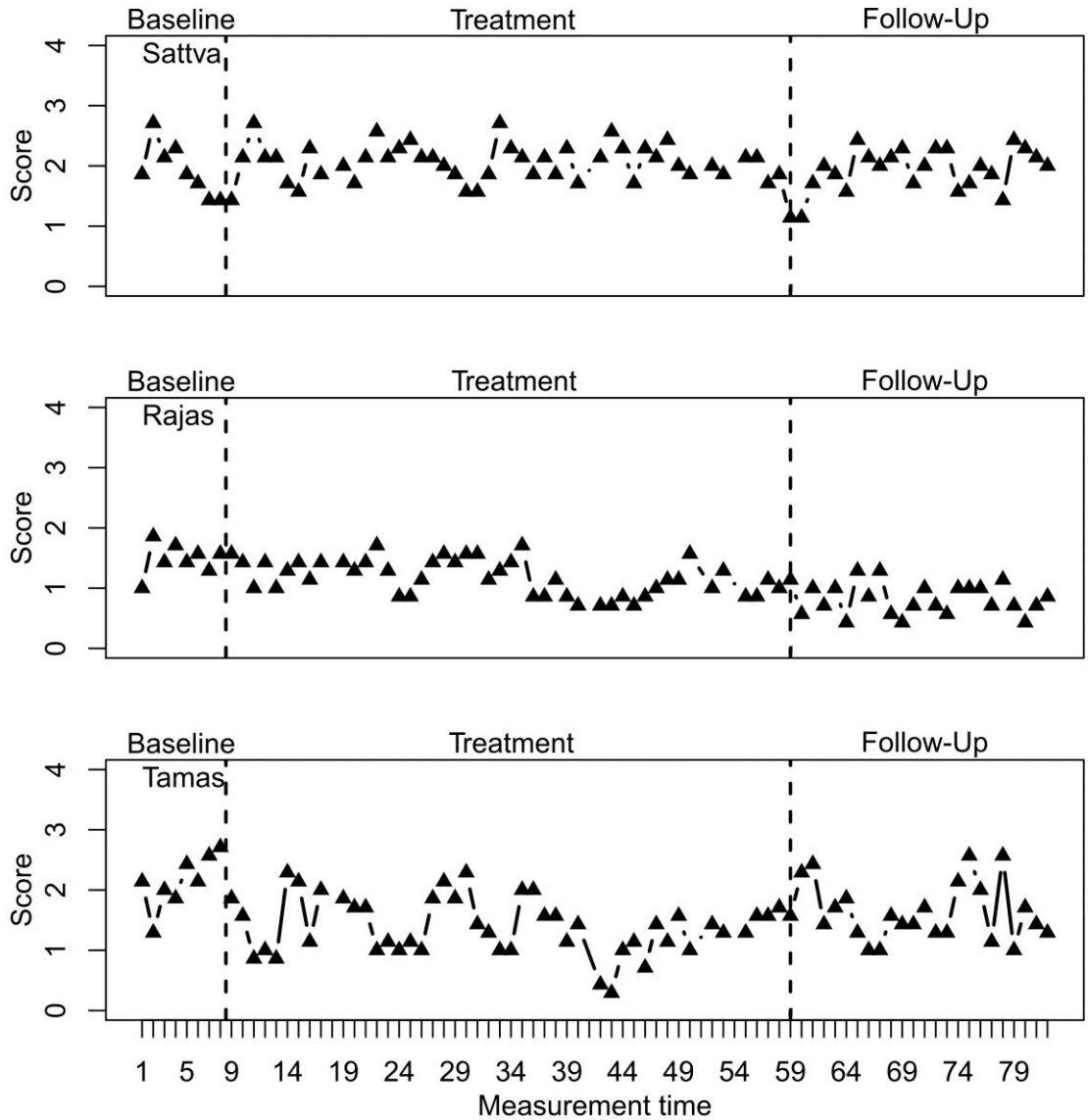

Figure 17 Daily Protocol Data Participant 4

Lea (#5)

See section 4.9.

Ines (#6)

Ines (age 28) attended eight sessions, however she started later than the rest of the group (and caught up on the sessions she missed in group 3). On average she applied the discussed techniques once a week. She reported having practiced yoga instead of the meditation for about three weeks. Ines recommended that personal coaching be offered simultaneously. She significantly increased *sattva* (τ = .63, p < .001) and decreased *rajas* (τ = .49, p < .001) and *tamas* (τ = .48, p < .01; see Figure 18).

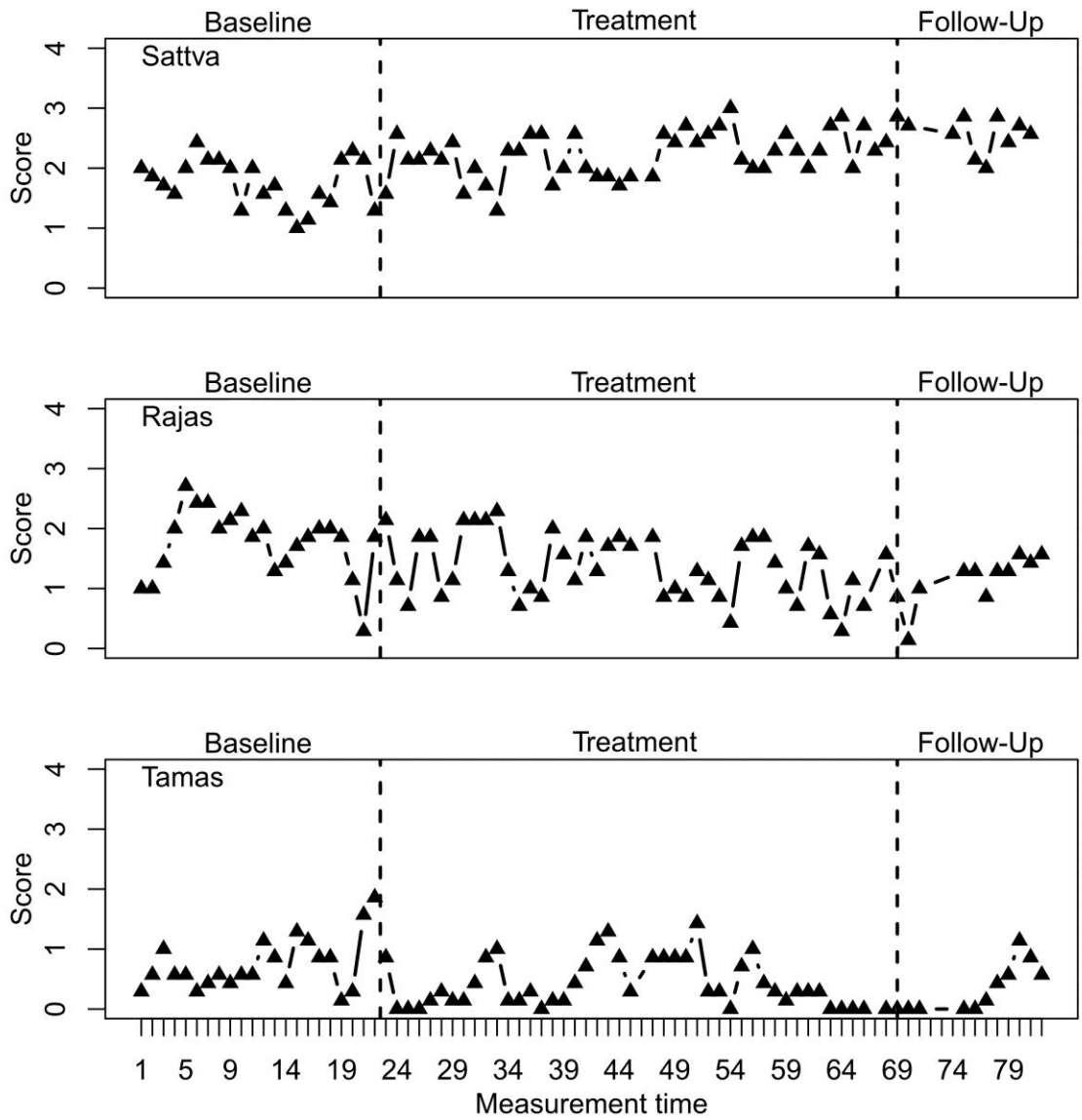

Figure 18 Daily Protocol Data Participant 6

Group 2

Helen (#7)

Helen (age 41) attended all the training sessions. Averagely, she applied the techniques once a week and practiced the mantra meditation regularly (39 times during the intervention, her protocols are missing after that, see Figure 19). There are no significant changes in the total *sattva*, *rajas* or *tamas* scores.

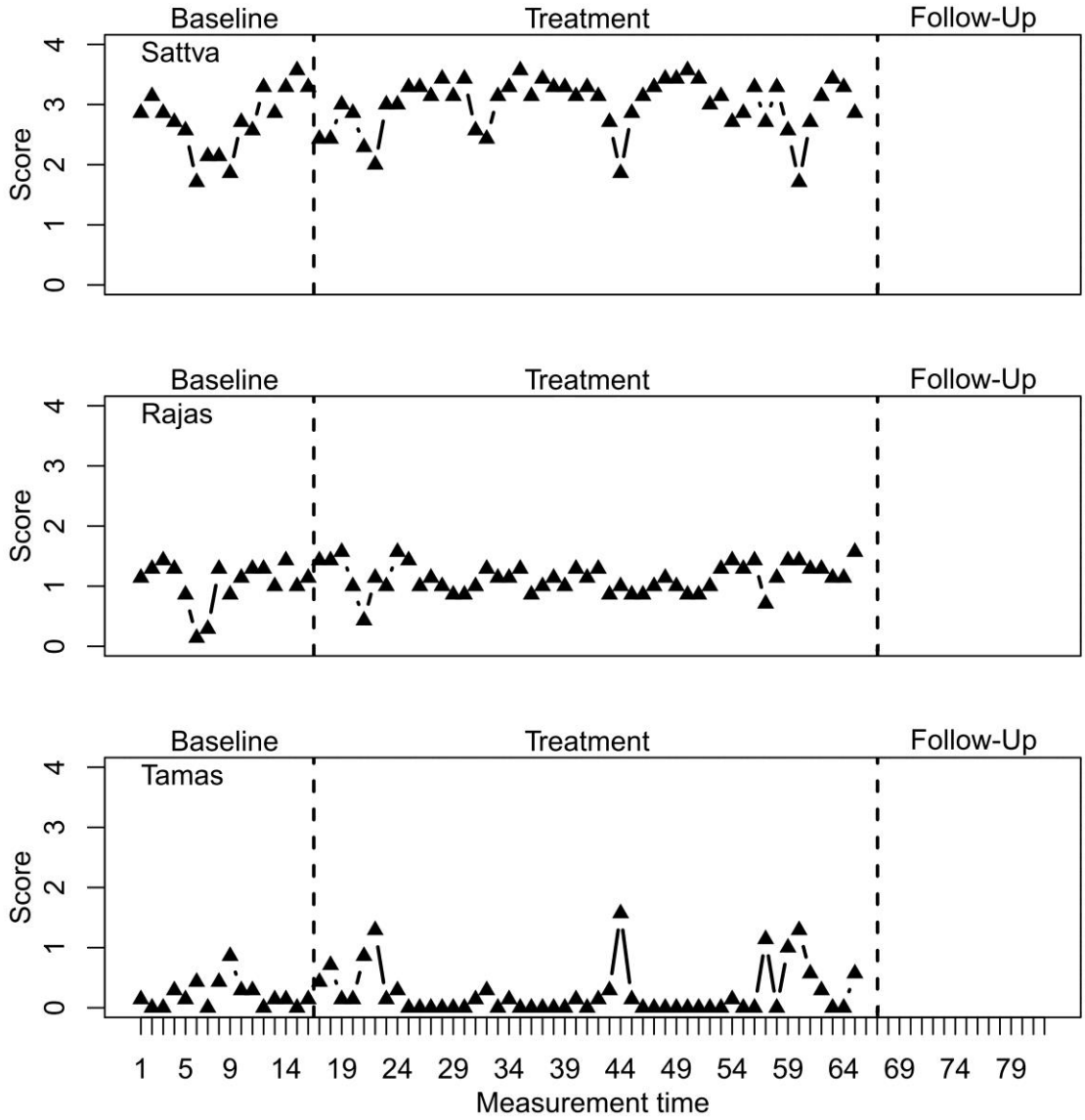

Figure 19 Daily Protocol Data Participant 7

Sophie (#8)

Sophie (age 56) took part in seven sessions. She applied the techniques we discussed several times a week averagely and meditated on 30 days of the intervention and immediate follow-up. Sophie reported that it was particularly helpful for her that she found access to meditation through the training. There are significant changes in *rajas* ($\tau = .39$, $p < .05$; see Figure 20).

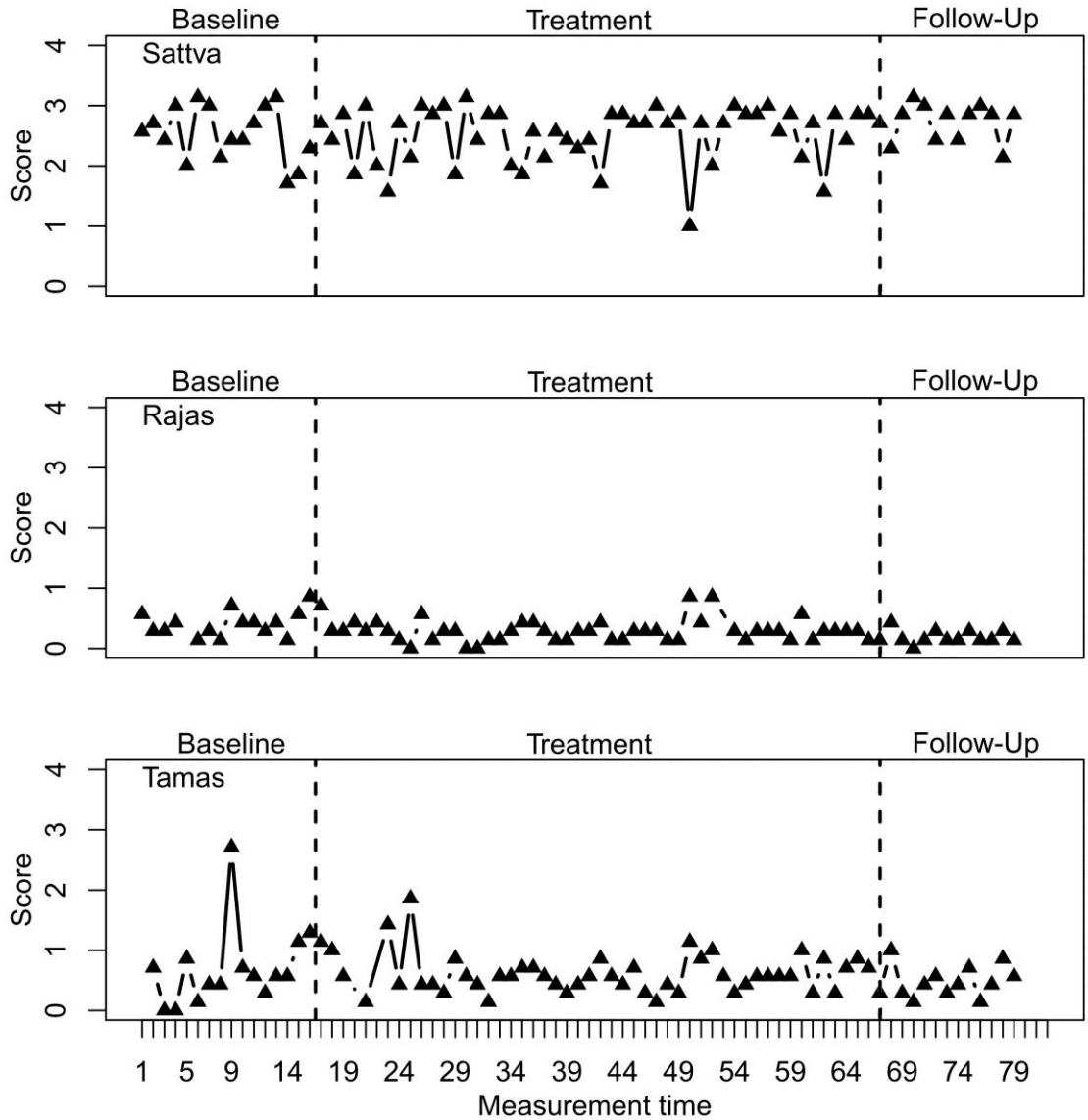

Figure 20 Daily Protocol Data Participant 8

Philipp (#9)

What immediately attracts attention in Philipp's (age 47) chart (see Figure 21) is the clear domination of *sattva* and the low variability of the *guna* values, which further decreased during the intervention. Philipp attended seven sessions and applied the techniques several times a week on average. He meditated on 54 days of the intervention and immediate follow-up and commented that it was the first time he had been able to integrate a meditation technique into his life and planned on continuing with it. *Sattva* (τ = .32, p < .05), *rajas* (τ = .74, p < .001) and *tamas* (τ = .49, p < .01) improved.

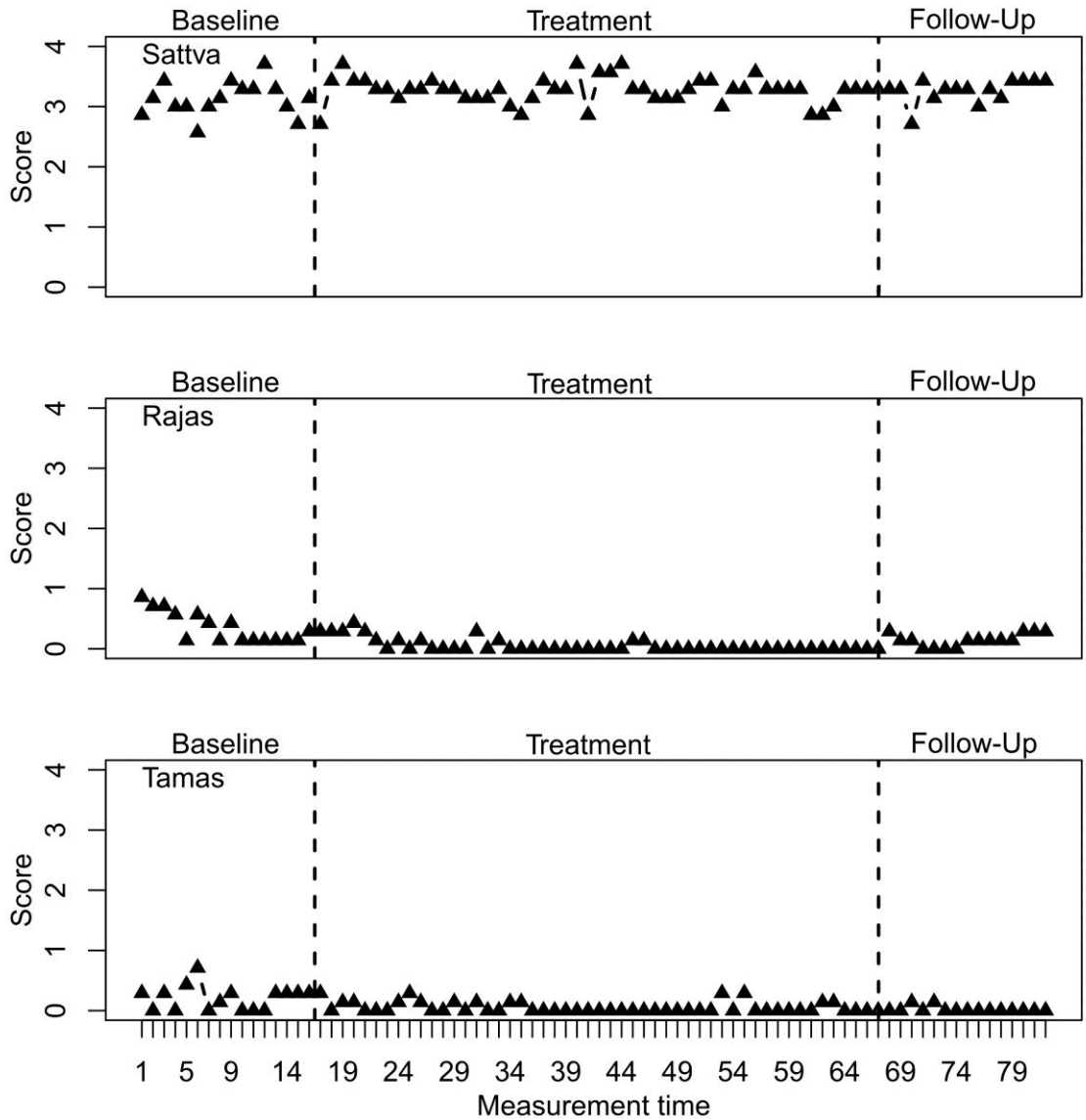

Figure 21 Daily Protocol Data Participant 9

Daniela (#10)

Daniela (age 30) attended five training sessions and applied the techniques several times a week on average. Like Manuela, Daniela had already been practicing a daily mantra meditation which she continued. *Rajas* (τ = -.75, p < .001) and *tamas* (τ = -.58, p < .01) increased (Daniela stopped submitting protocols eight days before the training ended, see Figure 22).

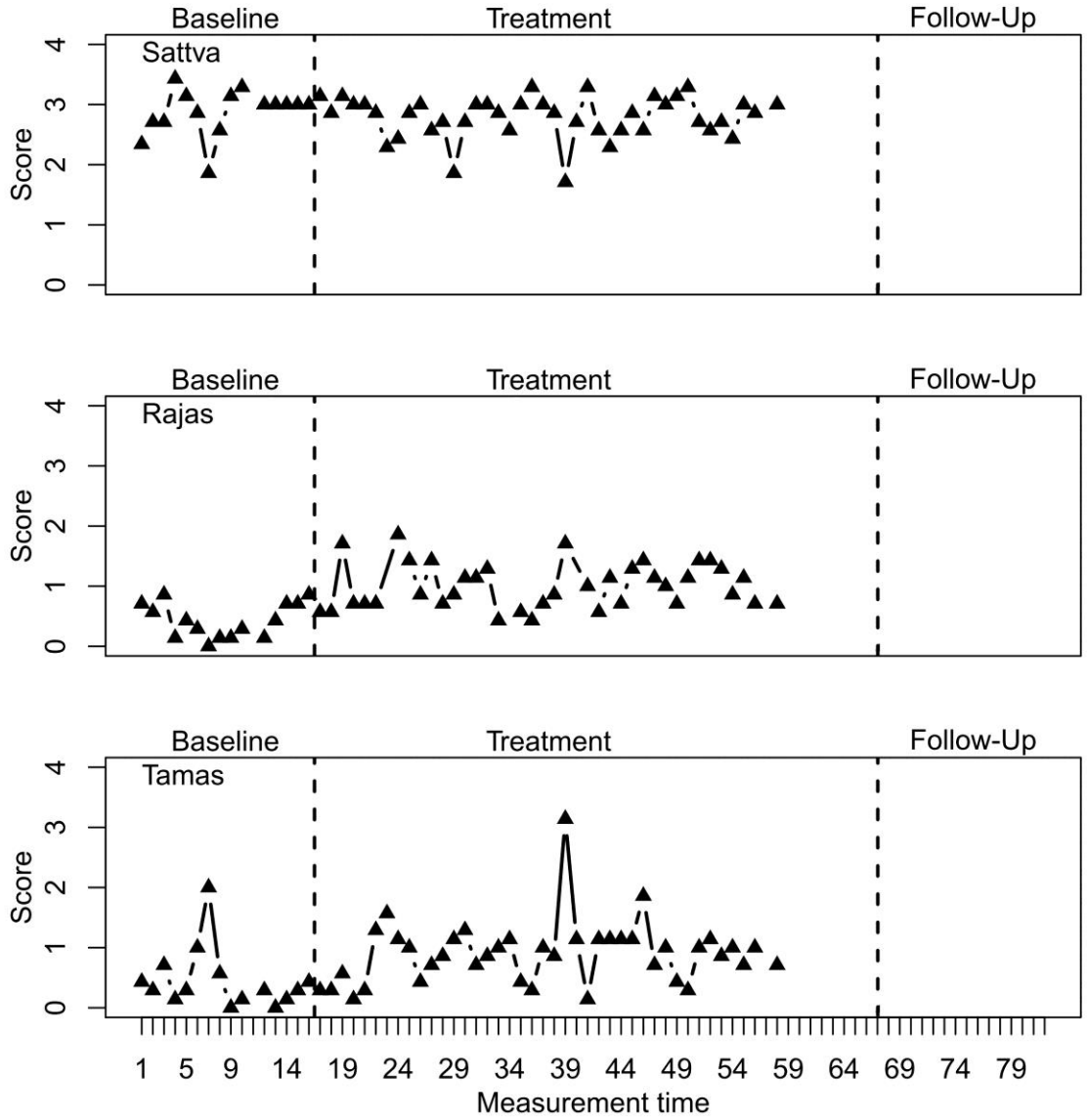

Figure 22 Daily Protocol Data Participant 10

Susanne (#11)

Susanne (age 33) participated in six training sessions. Generally she applied the training techniques a few times to once a week and meditated on 16 days of the intervention and immediate follow-up. She reported having practiced different kinds of meditation, partly guided meditations, partly breath meditation. The trend of her chart (see Figure 23) shows improvement during the intervention phase and a regression back to the baseline status quo during the follow-up. Nevertheless she reports having achieved greater tranquility and perserverance at the first elaborate follow-up measurement. Taken together, the intervention phase and follow-up show significant improvement in all *gunas* compared to the baseline: *sattva* (τ = .54, p < .01), *rajas* (τ = .64, p < .001) and *tamas* (τ = .58, p < .001).

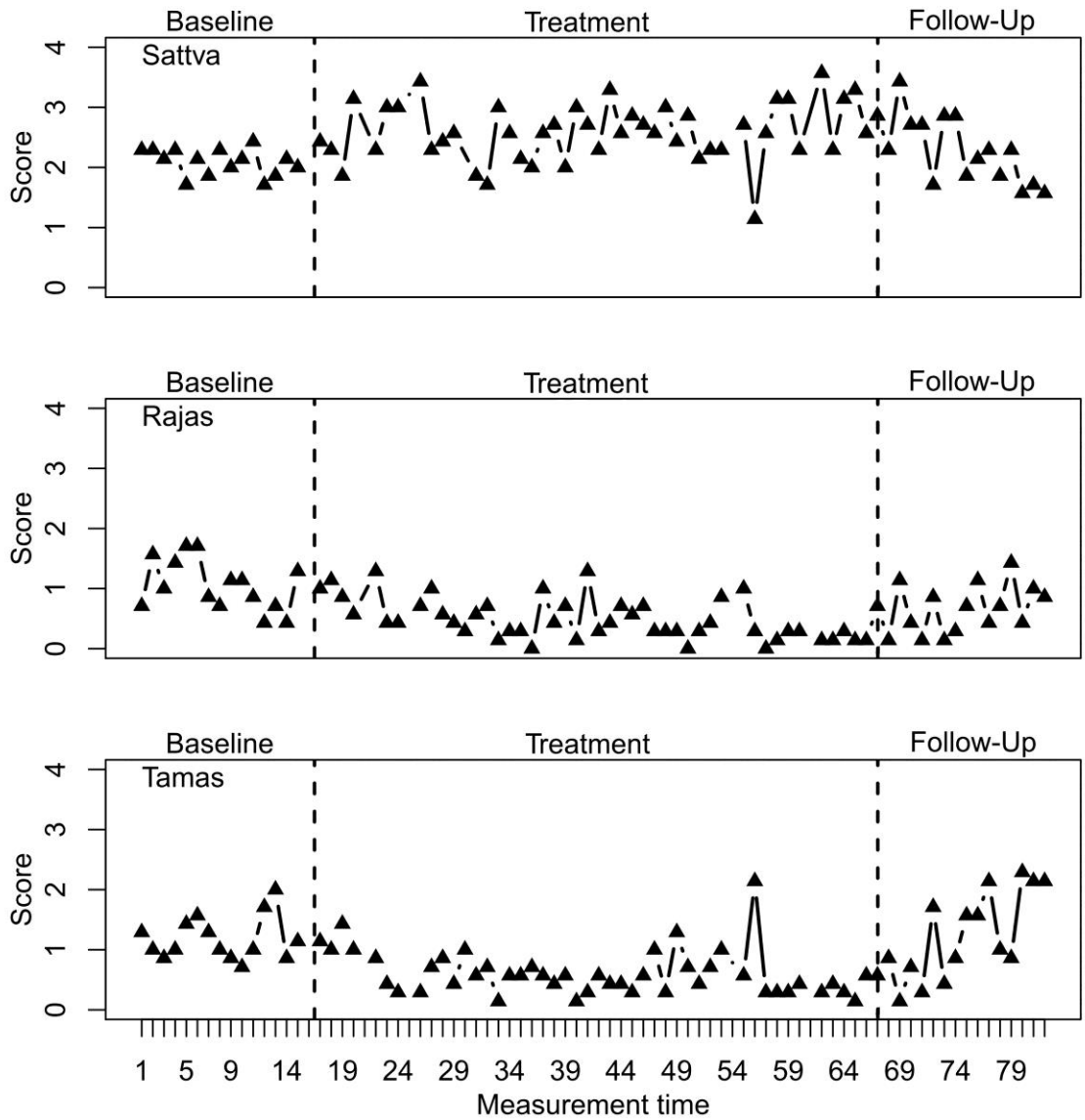

Figure 23 Daily Protocol Data Participant 11

Elisabeth (#12)

Elisabeth (age 54) attended five of the training sessions. Except for PMR and the meditation she reported having applied each technique several times daily. She meditated on 37 days. *Sattva* (τ = .63, p < .001) and *tamas* (τ = .55, p < .01) improved (see Figure 24).

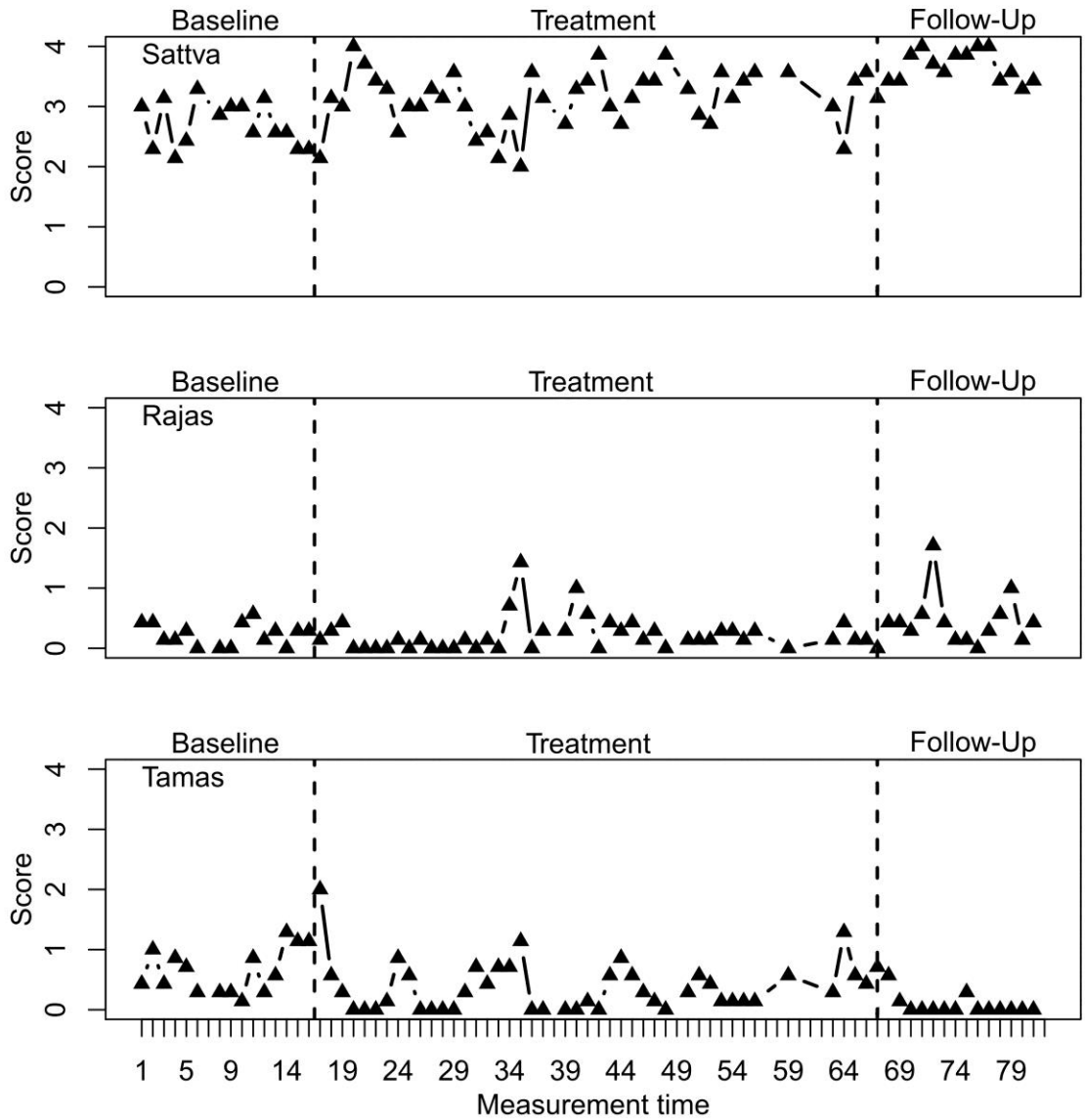

Figure 24 Daily Protocol Data Participant 12

Group 3

Paul (#13)

Paul (age 33) participated in all the training sessions and applied the training techniques once a week on average. He meditated daily during the whole time, including the baseline. He practiced the mantra meditation we taught in the course most of the time after the training started. All three *gunas* improved in the intervention/follow-up phase (*sattva*: $\tau = .31$, $p < .05$; *rajas*: $\tau = .36$, $p < .01$; *tamas*: $\tau = .39$, $p < .01$; see Figure 25).

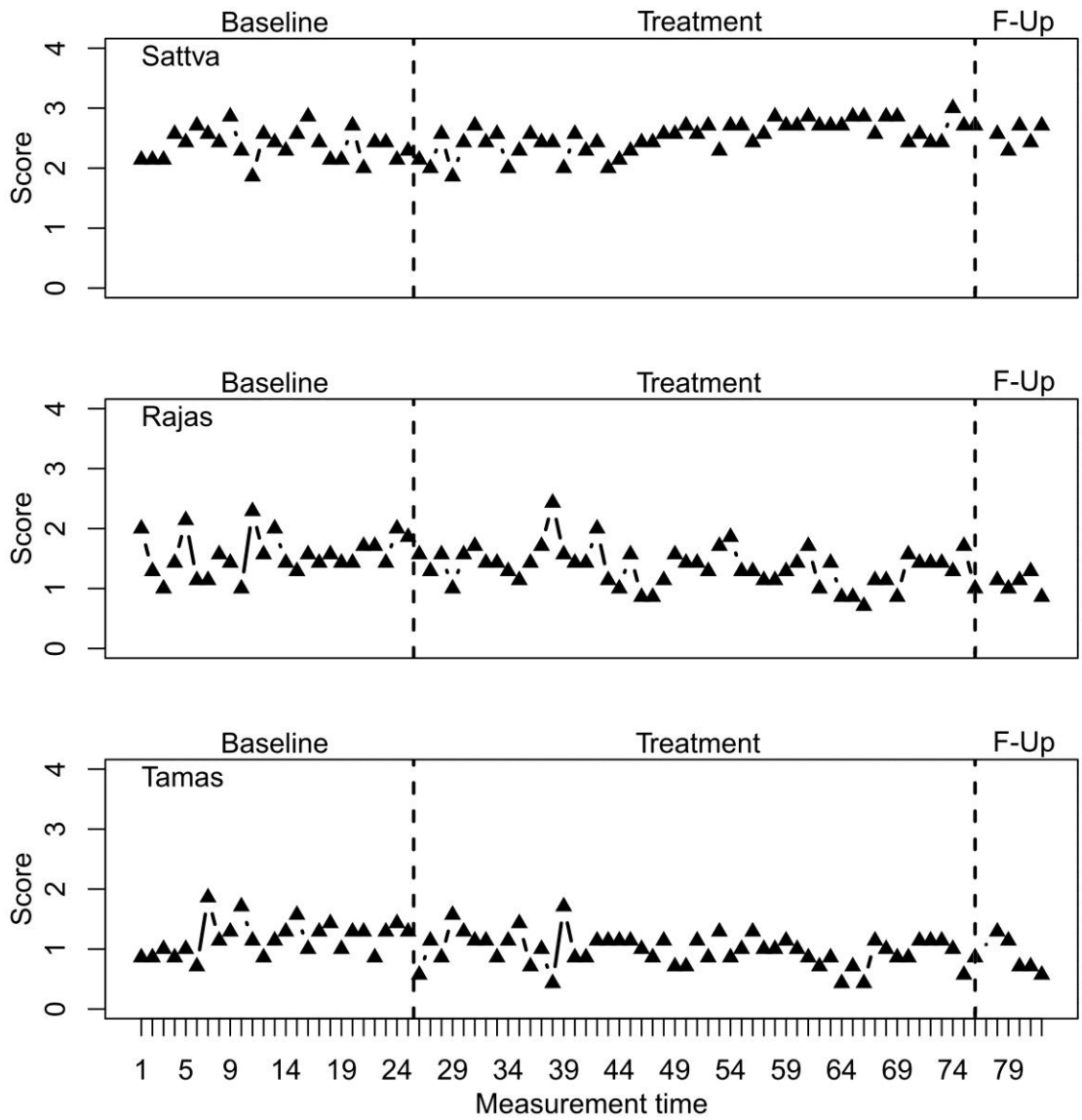

Figure 25 Daily Protocol Data Participant 13

Jana (#14)

See section 4.9.

Group 4

Kerstin (#15)

Kerstin (age 30) attended seven sessions and averagely applied the training techniques once a week. She practiced vipassana meditation on two thirds of the days of the intervention phase. Her protocol (see Figure 26) shows that although for most of the baseline *sattva* was the least prominent *guna*, it became the dominant *guna* after one third of the intervention phase. Significant changes were found for *sattva* (τ = .48, p = .001) and *tamas* (τ = .45, p = .001).

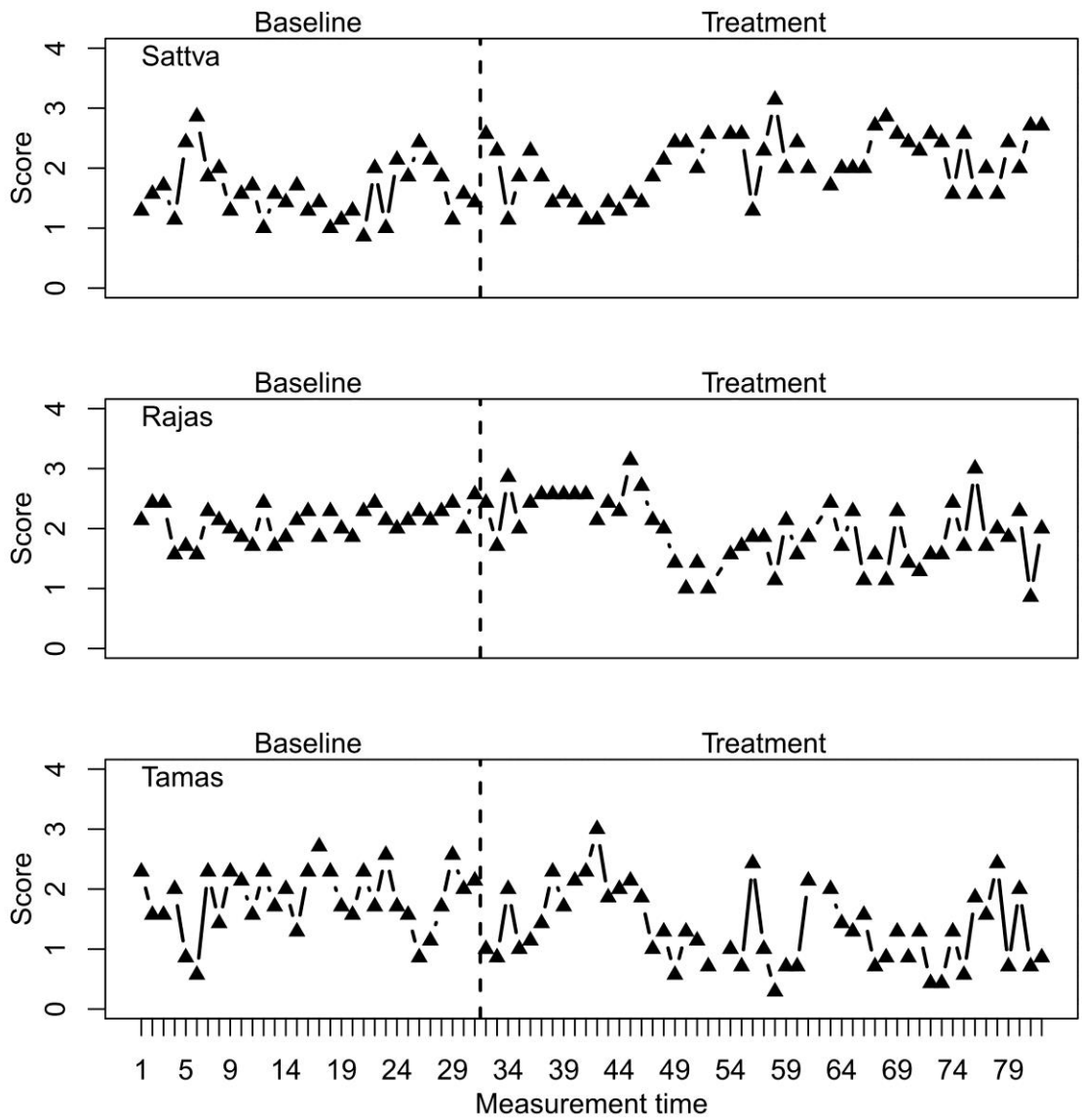

Figure 26 Daily Protocol Data Participant 15

Linda (#16)

Linda (age 58) participated in all the training sessions and meditated almost daily (on 42 days). Averagely she applied the trained techniques several times per week. All three *gunas* changed significantly (*sattva*: $\tau = .3$, $p < .05$; *rajas*: $\tau = .41$, $p < .01$; *tamas*: $\tau = .39$, $p < .01$; see Figure 27).

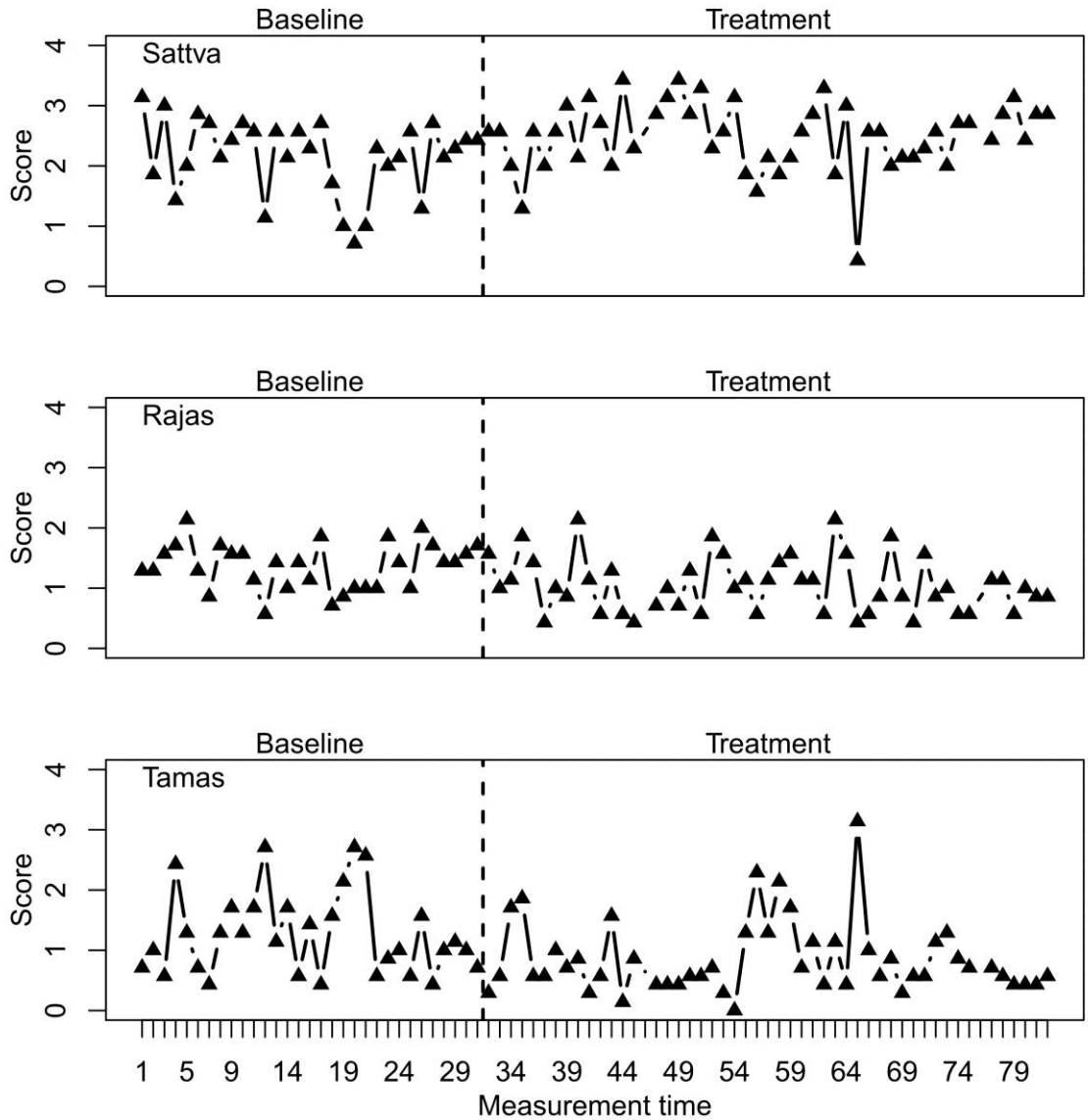

Figure 27 Daily Protocol Data Participant 16

Martin (#17)

Martin (age 43) attended seven training sessions. On average he applied the training techniques once a week and meditated on 26 days. Only *rajas* showed a significant improvement ($\tau = .57$, $p < .001$, see Figure 28).

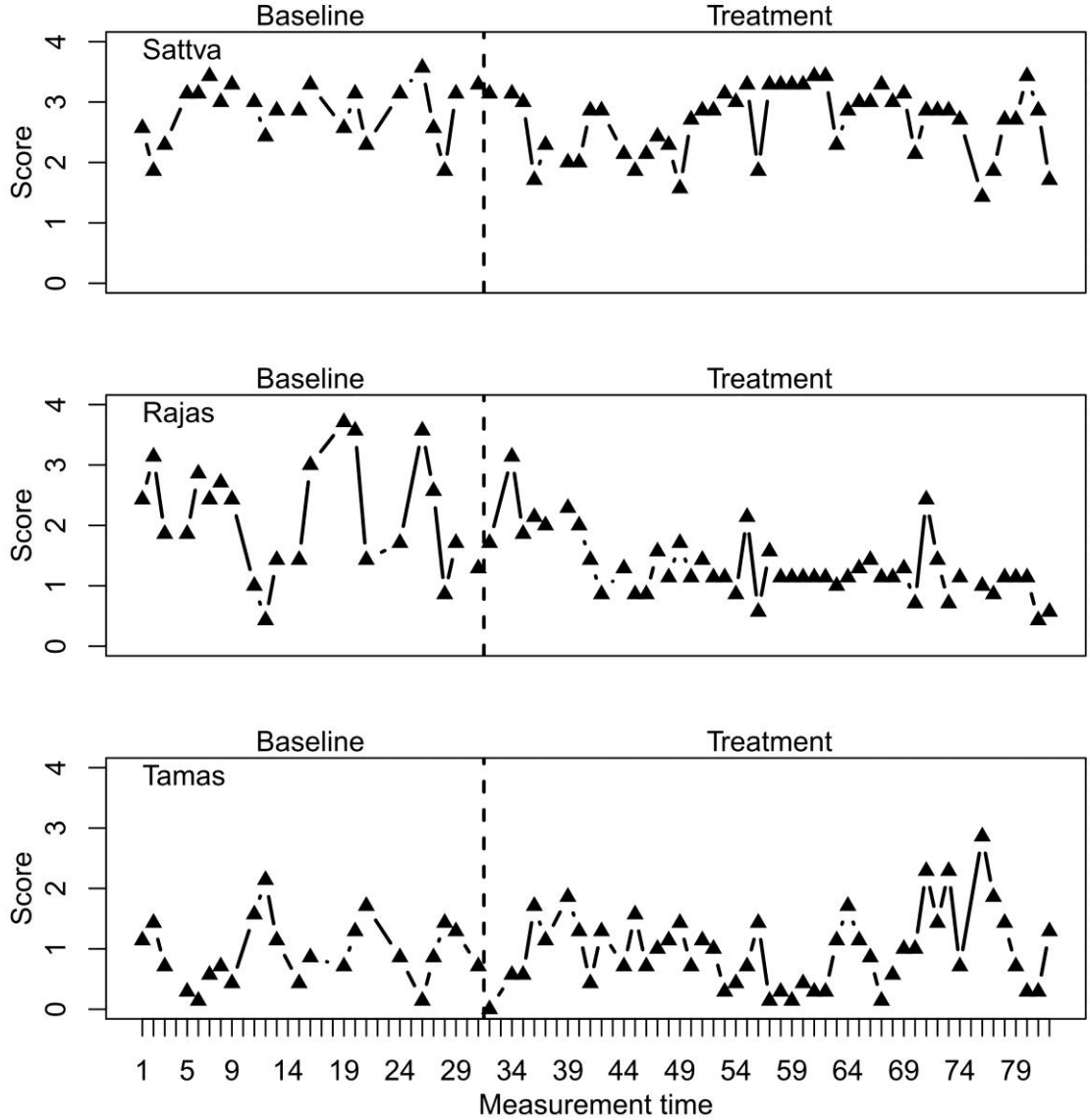

Figure 28 Daily Protocol Data Participant 17

Carolin (#18)

Carolin (age 30) participated in all eight sessions. She applied the training techniques several times a week on average and meditated almost daily (42 days). She already practiced a different mantra meditation before the training and added the new mantra to her daily practice. *Rajas* (τ = .3, p < .05) and *tamas* (τ = .5, p < .001) decreased significantly in the intervention phase (see Figure 29).

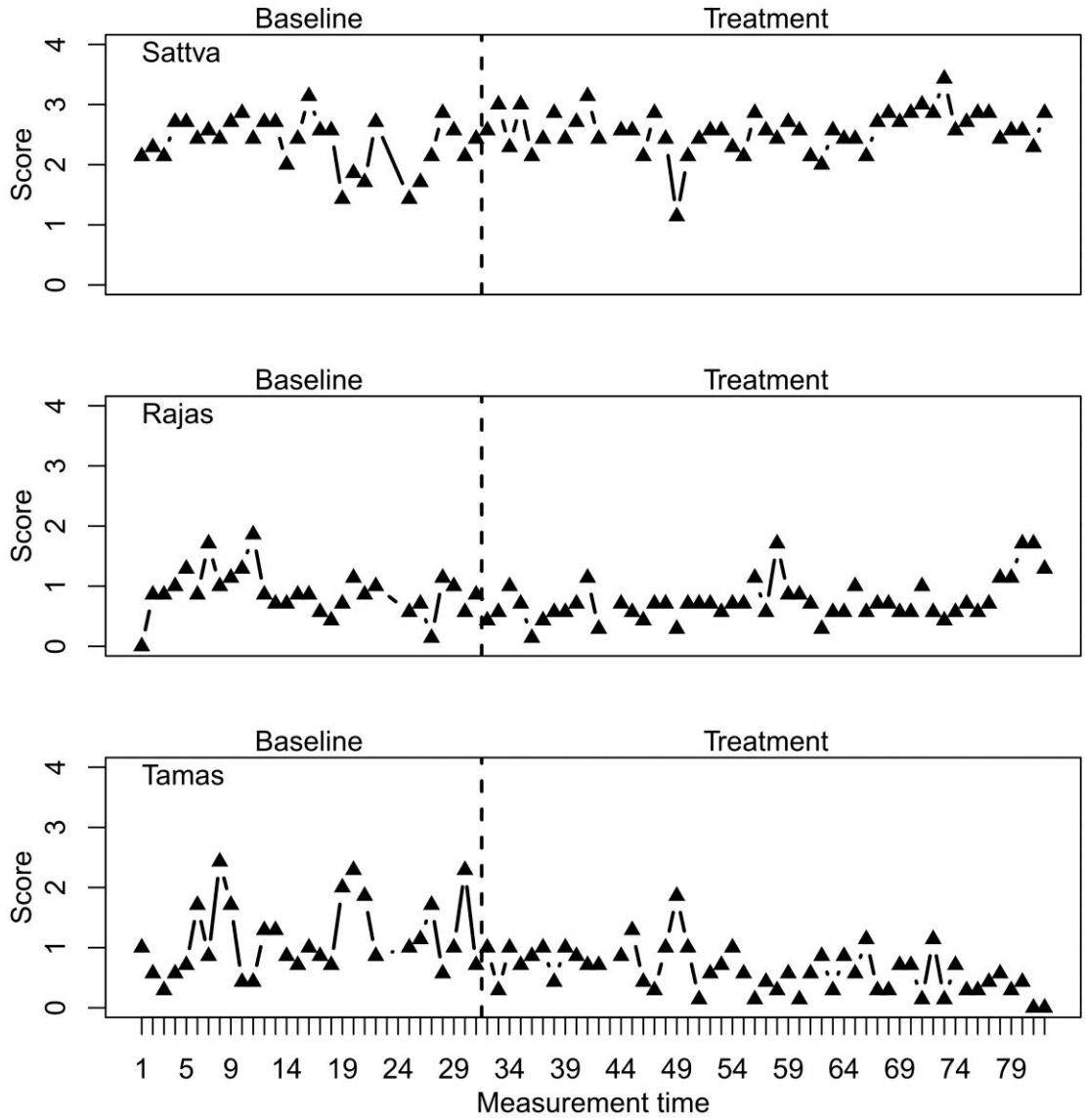

Figure 29 Daily Protocol Data Participant 18

Astrid (#19)

Astrid (age 30) attended five training sessions and applied the training techniques several times a week. She practiced laya yoga meditation every day (including the baseline phase). In the baseline phase *sattva* was strong, with *rajas* and *tamas* as the weaker *gunas* (see Figure 30). During the intervention phase this difference between *sattva* on the one hand and *rajas* and *tamas* on the other decreased. This reflects in a significant decrease of *sattva* (τ = -.32, p < .05) and increase in *tamas* (τ = -.39, p < .01).

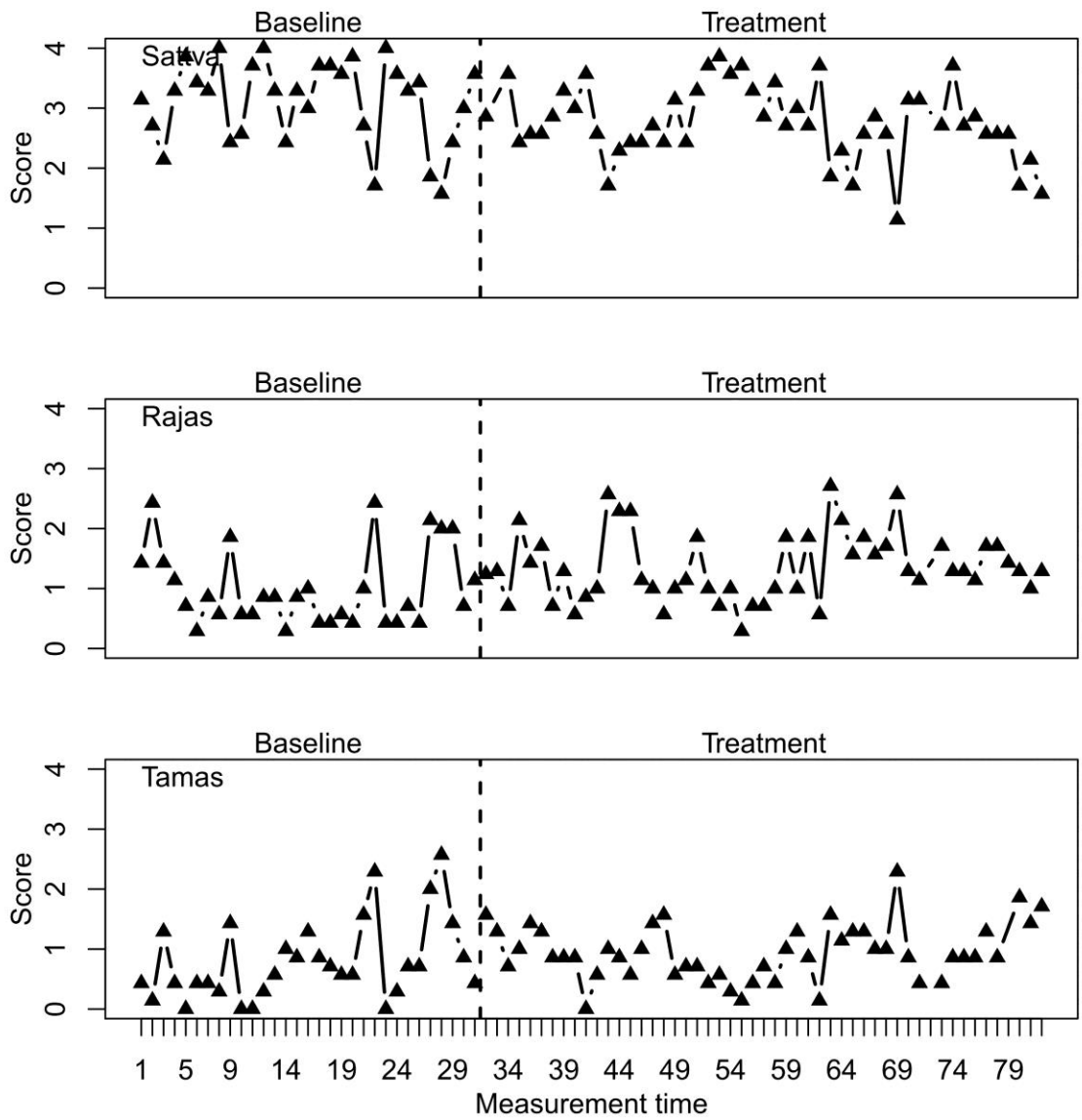

Figure 30 Daily Protocol Data Participant 19

Katrin (#20)

See section 4.9.

Tim (#21)

See section 4.9.

Saskia (#22)

Saskia (age 47) attended four training sessions. Four days after the last session she attended, she stopped filling out the daily protocols. During the intervention phase she meditated regularly (on 31 days). *Sattva* (τ = .37, p < .01) and *rajas* (τ = .82, p < .001) show improvement in the intervention phase (see Figure 31).

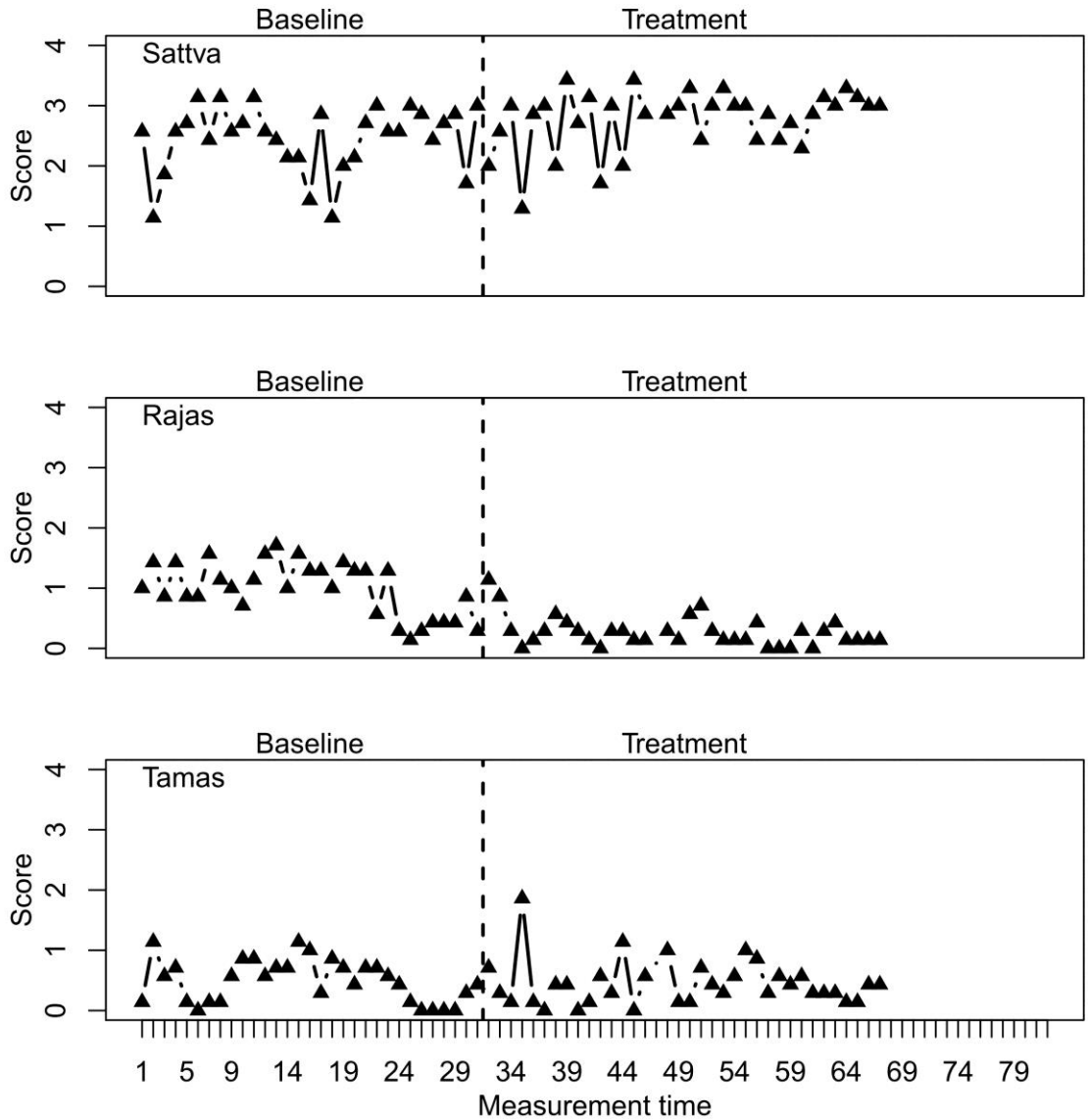

Figure 31 Daily Protocol Data Participant 22

Ivonne (#23)

Ivonne (age 37) also attended four training sessions. She participated in the last session of group 3, so her intervention phase ended earlier than that of other participants from group 4. Ivonne meditated on three days out of four, including the baseline. She practiced laya meditation most of the time and after the onset of the traiing sometimes the mantra meditation we introduced. On average she applied the training techniques several times a week. All three *gunas* improved (*sattva*: $\tau = .32$, $p < .05$; *rajas*: $\tau = .58$, $p < .001$; *tamas*: $\tau = .31$, $p < .05$; see Figure 32).

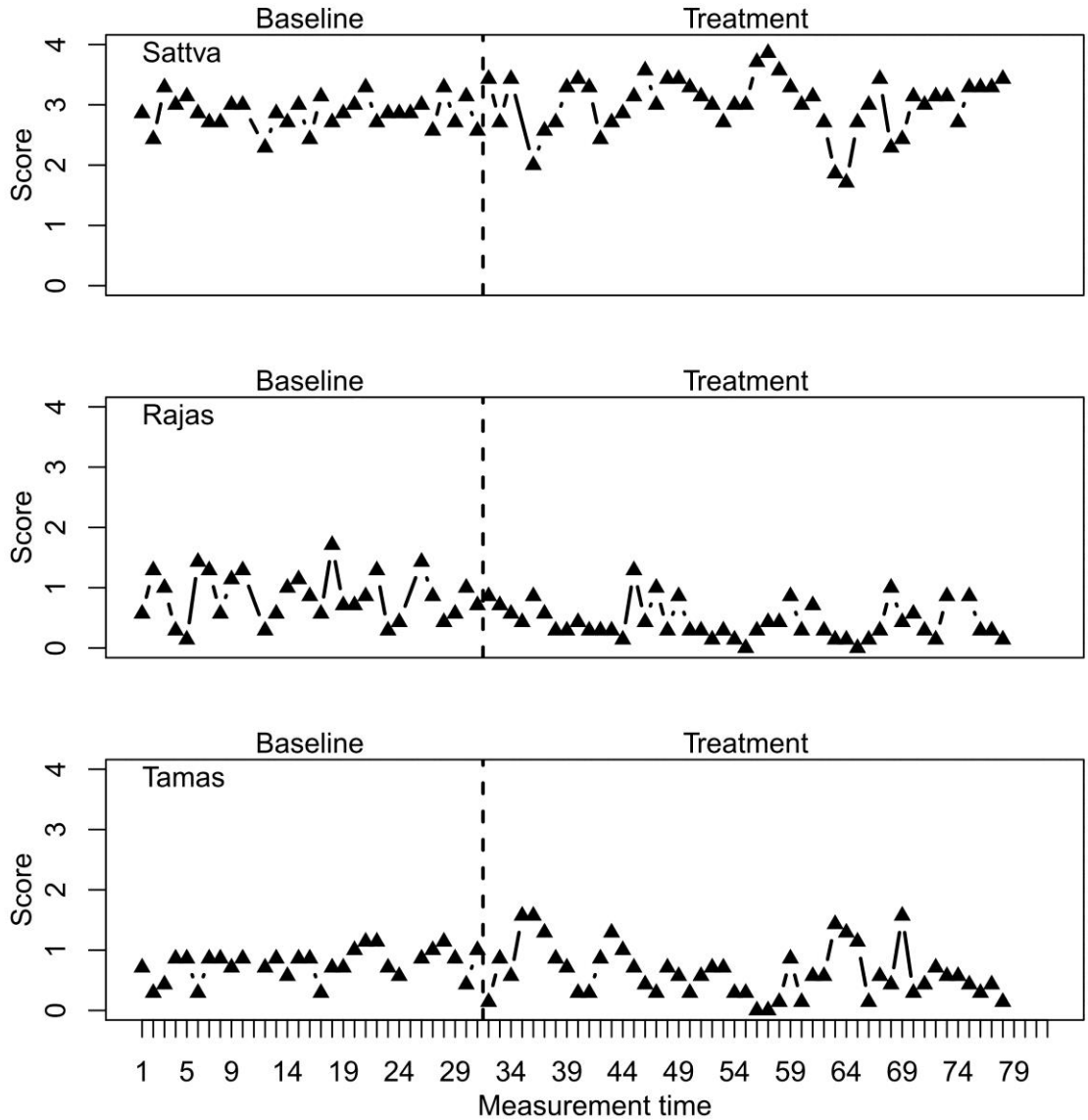

Figure 32 Daily Protocol Data Participant 23

4.11.3 τ Effect-Sizes for Each Participant for Each Subscale

Table 3 τ Effect-Sizes for the Seven Sattva Items from the Daily Protocol

subject	cognition	style of working	emotions	motives	volition	activity-level	social behavior	total (scale sums)
1	-.62*	-.22	.07	.06	.62*	.53*	.19	.18
2	.01	-.13	.05	.13	.49*	-.53*	-.17	.02
3	.03	.31	.24	.38	.68**	.23	.25	.31
4	-.01	.2	.14	-.09	.19	.11	-.06	.18
5	-.41	-.6*	-.52*	-.35	-.31	-.34	-.43	-.61*
6	.23	.62***	.09	.5***	.49***	-.03	.39**	.63***
7	.29	.16	.2	.36*	.02	.11	.21	.32
8	.02	-.1	.07	.06	.07	.23	-.12	.04
9	.29	.02	.22	.2	.08	-.15	.14	.32*
10	-.09	-.22	-.03	-.09	-.13	.18	-.3	-.25
11	.38*	.5**	.29	-.15	.47**	.38*	.27	.54**
12	.68***	.24	.33*	.49**	.35*	-.04	.34*	.63***
13	.21	.24	.09	.12	.2	-.07	.11	.31*
14	.07	.61***	.6***	.5***	.26	.54***	.08	.63***
15	.32*	.27*	.27*	.19	.41**	.26*	.23	.48***
16	.07	.36**	.01	.07	.16	.28*	.47***	.3*
17	-.26	-.23	0	.09	.02	.09	-.29	-.18
18	.06	.12	.19	.03	.07	.3*	.02	.26
19	-.14	-.05	-.15	-.41**	-.18	-.26*	-.4**	-.32*
20	.33*	.26	.09	.48***	.41**	.25	.05	.58***
21	.32*	.15	.06	.66***	.45***	.3*	.52***	.58***
22	.29*	.23	.02	.01	.21	.24	.34*	.37**
23	.26	.18	.04	.09	.04	.19	.08	.32*
total (combined subject τs)	.14***	.17***	.11***	.16***	.21***	.14***	.11***	.29***

* p < .05; ** p < .01; *** p < .001

Table 4 τ Effect-Sizes for the Seven Rajas Items from the Daily Protocol

subject	cognition	style of working	emotions	motives	volition	activity-level	social behavior	total (scale sums)
1	.39	.4	.25	-.19	.74**	-.08	.65**	.59*
2	.02	.53*	.45*	.15	.24	.04	-.36	.46*
3	.39	.22	.01	.39	-.1	.4	.81***	.46*
4	.48*	.54*	.59**	.37	.07	.32	-.17	.68**
5	-.66*	.06	-.53*	-.31	-.43	.63**	-.02	-.44
6	.19	.12	.22	.29*	.32*	.29*	.62***	.49***
7	.34*	-.4*	.18	-.25	-.03	-.17	.11	-.05
8	-.03	.13	.1	.02	.03	.29	.33*	.39*
9	.25	.18	.31	.13	.06	.24	.82***	.74***
10	-.2	-.55**	-.23	-.6***	-.37*	-.37*	-.68***	-.75***
11	.44**	.36*	.2	.48**	.53**	.18	.43*	.64***
12	0	-.07	.33	0	-.28	-.19	-.07	.01
13	.1	.23	-.05	.31*	.06	.45**	.09	.36**
14	.33*	.2	.14	.23	-.02	.04	.16	.3*
15	.21	.12	.23	.39**	-.33*	.09	-.17	.15
16	.24	.11	.18	.38**	.35**	.06	.2	.41**
17	.49**	.51***	.62***	.6***	.09	.25	.35*	.57***
18	.04	.05	.18	.36**	.14	-.13	-.05	.3*
19	-.25	-.38**	-.3*	-.02	-.27*	-.2	-.13	-.39**
20	.11	.16	.14	.2	.08	.2	.06	.34*
21	.25	.07	.64***	.43**	.03	.08	.07	.37**
22	.79***	.59***	.7***	.28*	.17	.22	-.02	.82***
23	.17	.23	.19	.41**	.44**	.26	.29*	.58***
total (combined subject τs)	.19***	.15**	.21***	.22***	.07*	.11***	.13***	.31***

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

Table 5 τ Effect-Sizes for the Seven Tamas Items from the Daily Protocol

subject	cognition	style of working	emotions	motives	volition	activity-level	social behavior	total (scale sums)
1	.02	.55*	.43	.29	.52*	.52*	.32	.53*
2	-.17	.5*	.05	.1	.28	.3	-.03	.3
3	.31	.17	.07	.01	.18	.25	.06	.27
4	.42	.48*	.13	.14	.55*	.61**	.66**	.68**
5	.08	-.17	-.59*	-.44	0	-.12	-.47*	-.52*
6	.82***	.42**	-.01	.04	-.1	.07	.2	.48**
7	-.06	-.07	-.22	-.04	-.06	-.01	.34*	.16
8	-.13	-.2	.14	-.04	-.08	-.04	.29	-.03
9	.35*	.23	-.03	0	.17	.09	.26	.49**
10	-.42*	-.61***	-.62***	0	-.38*	.22	-.07	-.58**
11	.46**	.49**	.02	-.1	.14	.55**	.55**	.58***
12	0	-.03	.44**	.56***	.1	.22	.32	.55**
13	.4**	-.01	.57***	.16	-.07	.01	-.05	.39**
14	.1	.33*	.44**	.21	.23	.26	-.67***	.33*
15	.1	.47***	.35**	.09	.29*	.24	.34*	.45***
16	.15	.37**	-.16	.17	.47***	.43**	.11	.39**
17	-.18	-.31*	-.07	.23	-.06	-.04	.2	0
18	.19	.07	.21	.36**	.27*	.57***	.26	.52***
19	.03	-.11	-.19	.07	-.18	.2	-.43**	-.25
20	.54***	.67***	-.13	-.16	.37**	.28*	-.38**	.33**
21	.26	.29*	.44**	.48***	.36**	.4**	.64***	.56***
22	-.4**	.07	.19	-.09	-.09	-.03	.07	.08
23	-.07	.16	.18	-.03	.07	.39**	.09	.31*
total (combined subject τs)	.13***	.17***	.09**	.1**	.12***	.23***	.1**	.28***

* p < .05; ** p < .01; *** p < .001

4.11.4 *g1* and *g2* for the nine Guna Scales and Other Dependent Variables

Table 6 *t*- and *g*-values for the nine Guna Scales

variable	t1	g1	t2	g2
Sattva cognition	3.36**	.7	3.09**	.64
Rajas cognition	4.23***	.88	4.62***	.96
Tamas cognition	2.2*	.46	3**	.63
Sattva style of working	1.43	.3	1.62	.34
Rajas style of working	.7	.15	.51	.11
Tamas style of working	2.52*	.53	3.59**	.75
Sattva emotions	2.97**	.62	3.02**	.63
Rajas emotions	3.69**	.77	3.81**	.79
Tamas emotions	2.04	.43	2.64*	.55
Sattva motives	1.56	.33	1.75	.36
Rajas motives	2.42*	.5	2.24*	.47
Tamas motives	2.95**	.62	4.02**	.84
Sattva activity-level	1.83	.38	1.68	.35
Rajas activity-level	.67	.14	.99	.21
Tamas activity-level	2.94**	.61	3.26**	.68
Sattva volition	2.63*	.55	2.34*	.49
Rajas volition	2.93**	.61	2.67*	.56
Tamas volition	2.51*	.52	2.72*	.57
Sattva spirituality	3.19**	.67	2.93**	.61
Rajas spirituality	2.37*	.49	1.88	.39
Tamas spirituality	1.85	.39	2.52*	.53
Sattva social behavior	3.31**	.69	3.37**	.7
Rajas social behavior	2.42*	.5	2.69*	.56
Tamas social behavior	2.35*	.49	2.18*	.45
Sattva health and health behavior	2.21*	.46	3.2**	.67
Rajas health and health behavior	3.37**	.7	3.5**	.73
Tamas health and health behavior	2.98**	.62	3.14**	.65

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

Table 7 *t*- and *g*-values for the Other Measured Dependent Variables

variable	*t1*	*g1*	*t2*	*g2*
Life-satisfaction (HSWBS)	1.28	.27	1.27	.26
General mood (HSWBS)	1.82	.38	2.6*	.54
Activation (BFS)	1.15	.24	1.3	.27
Cheerfulness (BFS)	.4	.08	1.11	.23
Calmness (BFS)	.88	.18	1.26	.26
Agitation (BFS)	.62	.13	.97	.2
Shiftlessness (BFS)	1.39	.29	1.72	.36
Anger (BFS)	.74	.15	1.27	.26
Depression(BFS)	.32	.07	.85	.18
Positive mood (BFS)	.93	.19	1.43	.3
Negative mood (BFS)	1.01	.21	1.61	.34
Self-regulation	2.94**	.61	2.98**	.62
Vitality (FEW 16)	2.62*	.55	3.03**	.63
Resilience (FEW 16)	1.56	.33	1.61	.34
Ability to enjoy (FEW 16)	2.27*	.47	2.12*	.44
Calmness (FEW 16)	3.25**	.68	3.31**	.69
Physical Well-being (total, FEW 16)	3.06**	.64	3.19**	.67
Worries (PSQ)	2.25*	.47	2.58*	.54
Tension (PSQ)	1.6	.33	1.86	.39
Pleasure (PSQ)	1.47	.31	1.65	.34
Demands (PSQ)	.134	.03	.62	.13
Perceived Stress (total, PSQ)	1.5	.31	1.91	.4
Vigor (UWES)	1.57	.33	1.88	.39
Dedication (UWES)	.56	.12	1.32	.28
Absorption (UWES)	1.06	.22	2.03	.42
Work-engagement (total, UWES)	1.09	.23	1.81	.38
Agreeableness (TIPI-G)	1.49	.31	1.3	.27
Conscientiousness (TIPI-G)	1.66	.35	1.88	.39
Emotional Stability (TIPI-G)	2.22*	.46	2.47*	.52
Extraversion (TIPI-G)	1.33	.28	.92	.19
Openness to experience (TIPI-G)	-.51	-.11	.37	.08

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

4.11.5 Means for all Dependent Variables

The Three Gunas

Guna Scales (Total)

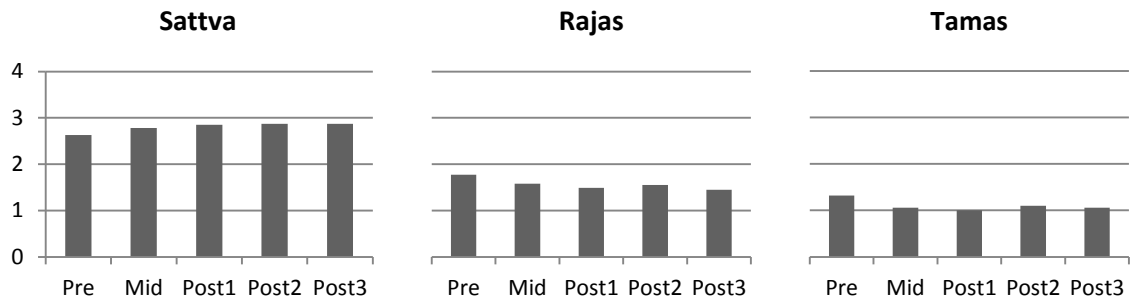

Figure 33 Means for Sattva, Rajas and Tamas in total (TGS, *N* = 23)

Cognition

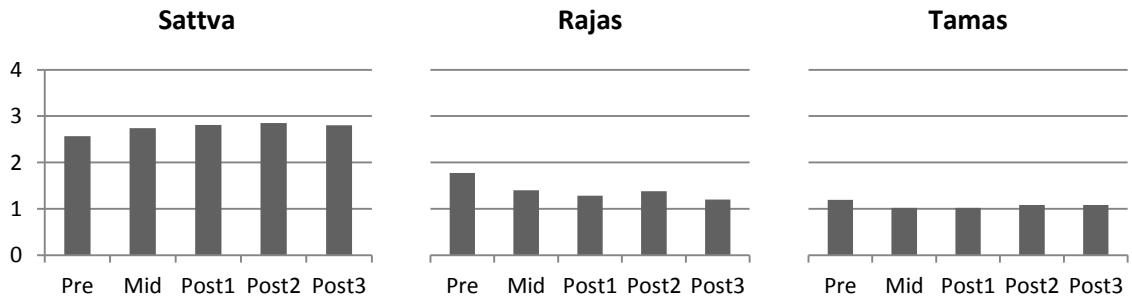

Figure 34 Means Cognition (TGS, *N* = 23)

Style of Working

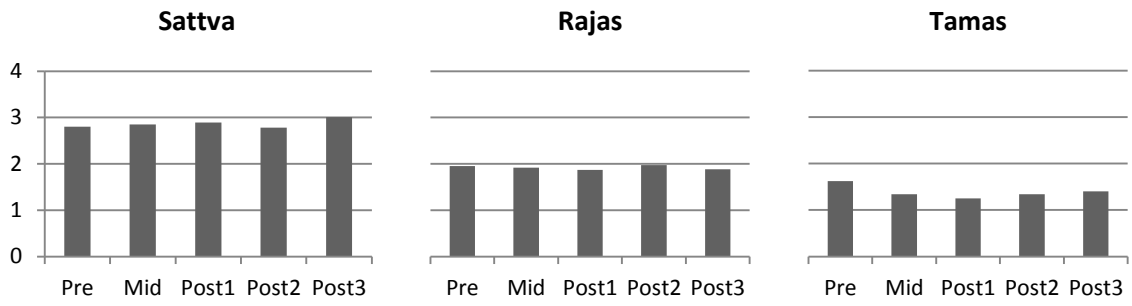

Figure 35 Means Style of Working (TGS, *N* = 23)

Emotions

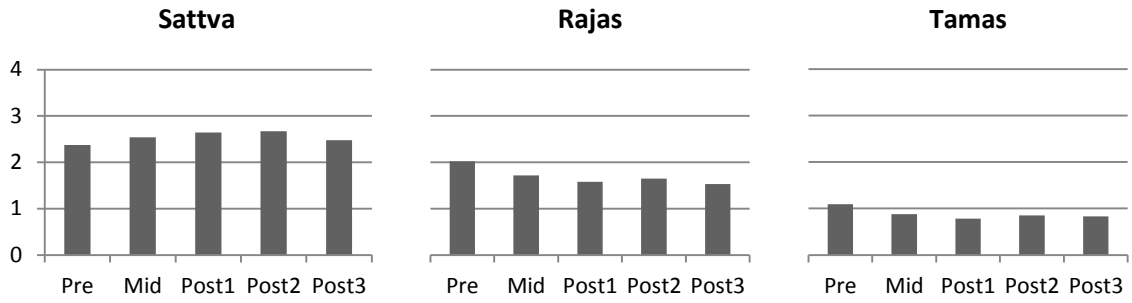

Figure 36 Means Emotions (TGS, *N* = 23)

Motives

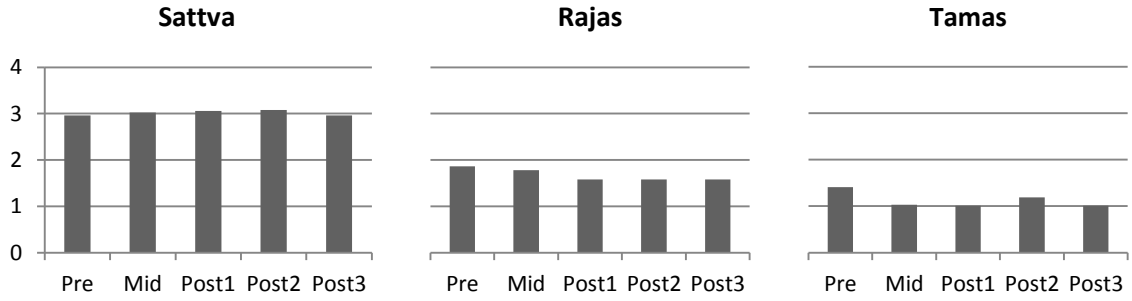

Figure 37 Means Motives (TGS, *N* = 23)

Activity-Level

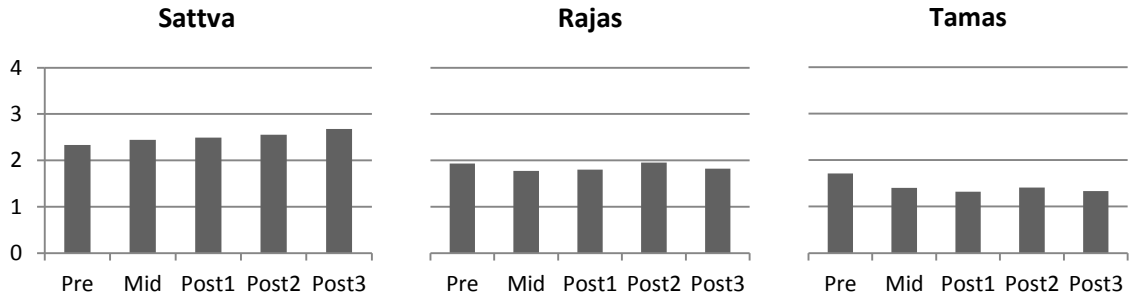

Figure 38 Means Activity-Level (TGS, *N* = 23)

Volition

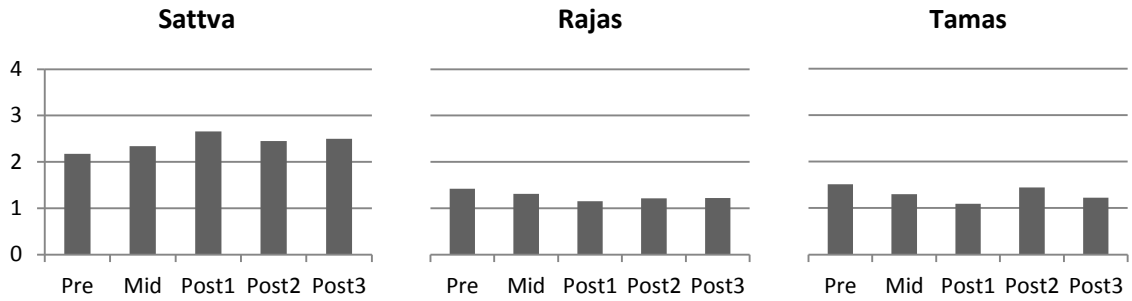

Figure 39 Means Volition (TGS, *N* = 23)

Spirituality

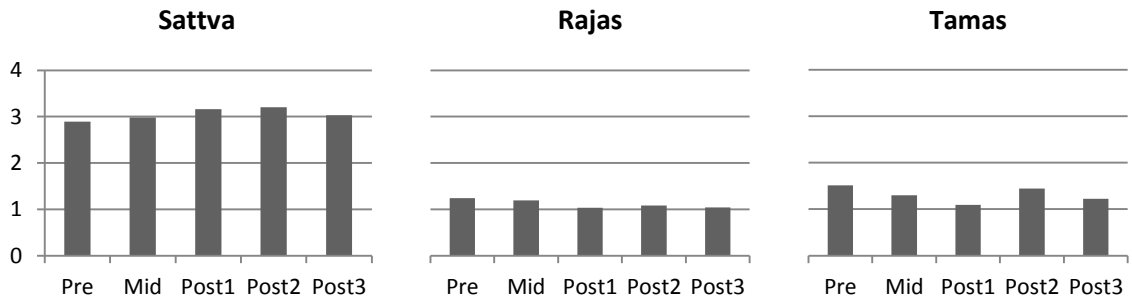

Figure 40 Means Spirituality (TGS, *N* = 23)

Social Behavior

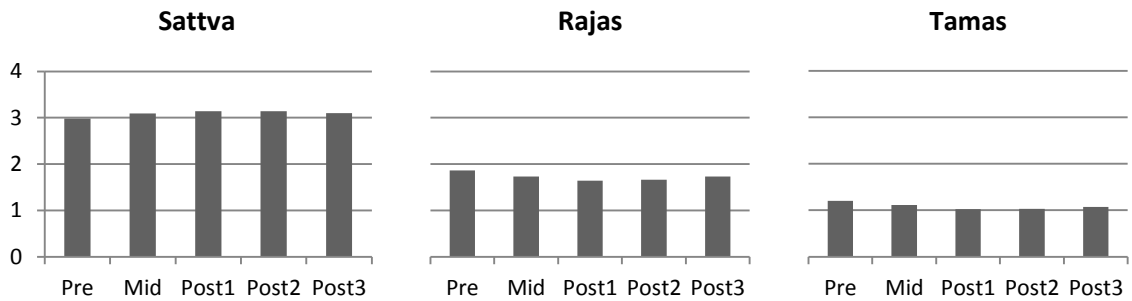

Figure 41 Means Social Behavior (TGS, *N* = 23)

Health and Health Behavior

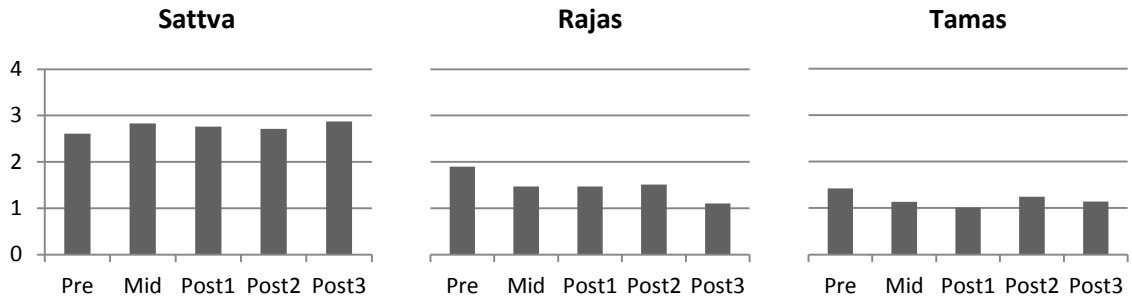

Figure 42 Means Health and Health Behavior (TGS, *N* = 23)

Other Dependent Variables

Habitual Subjective Well-Being Scale (HSWBS)

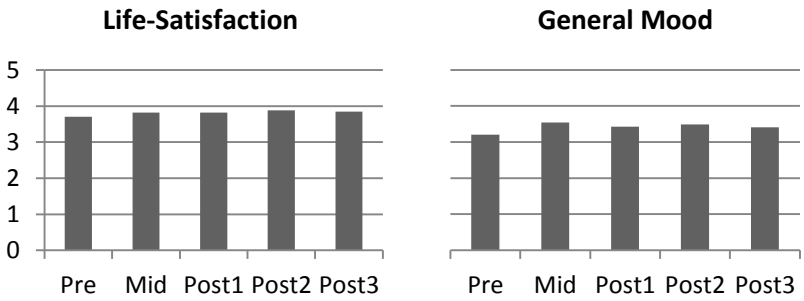

Figure 43 Means Life-Satisfaction and General Mood (HSWBS, *N* = 23)

Well-Being Scales (BFS)

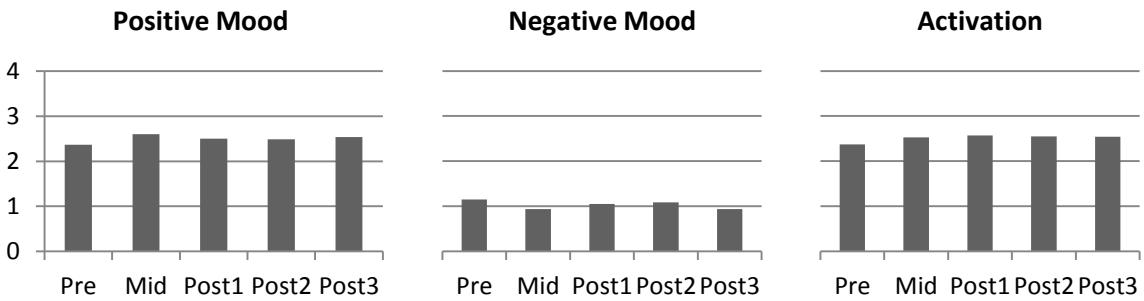

Figure 44 Means Positive Mood, Negative Moods and Activation (BFS, *N* = 23)

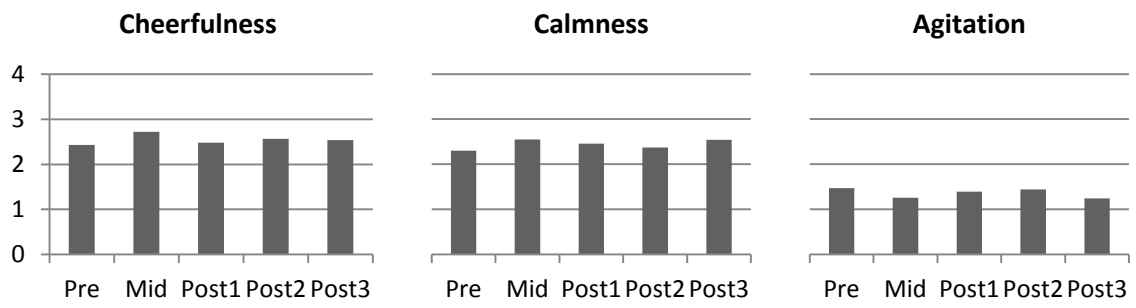

Figure 45 Means Cheerfulness, Calmness and Agitation (BFS, *N* = 23)

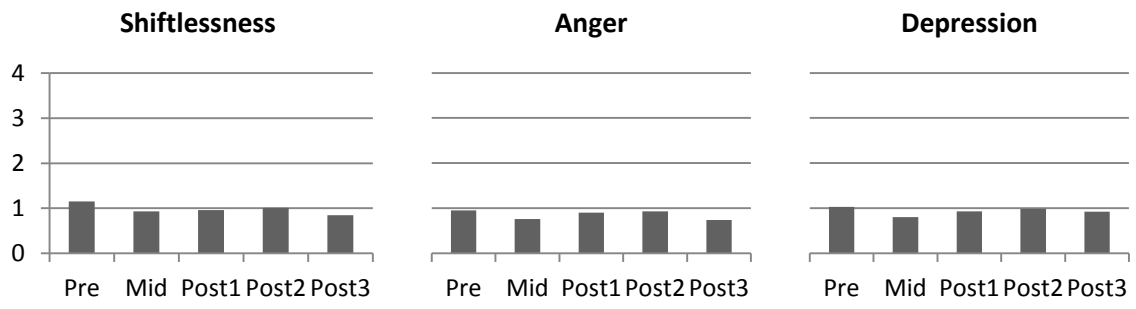

Figure 46 Means Shiftlessness, Anger and Depression (BFS, *N* = 23)

Self-Regulation

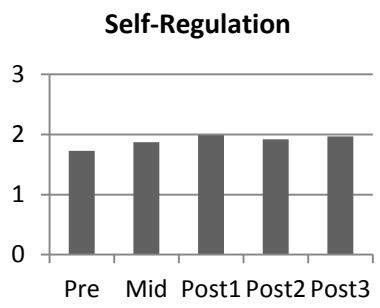

Figure 47 Means Self-Regulation (*N* = 23)

Physical Well-Being

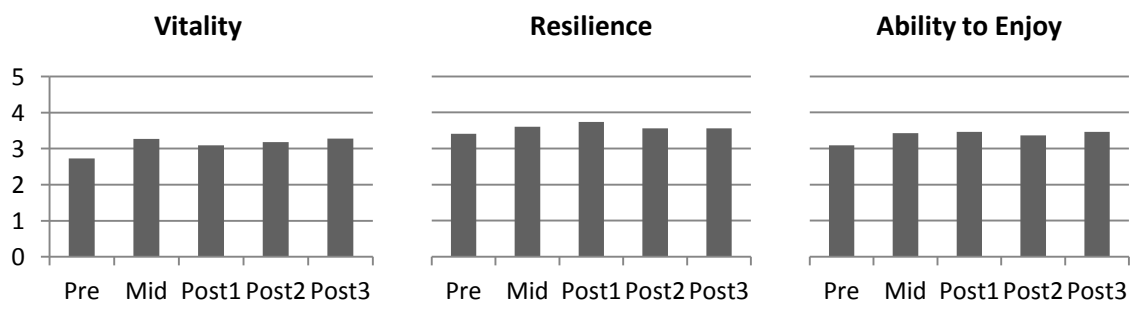

Figure 48 Means Vitality, Resilience and Ability to Enjoy (FEW 16, *N* = 23)

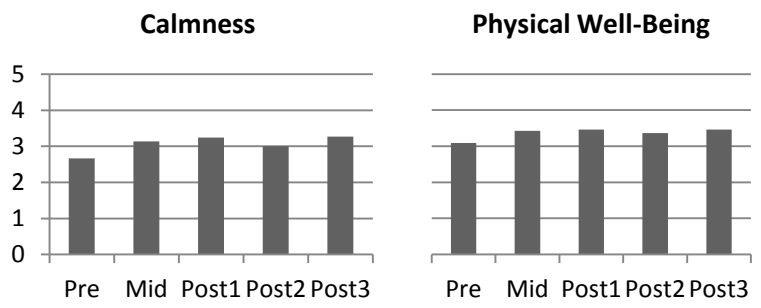

Figure 49 Means Calmness and Physical Well-Being in total (FEW 16, *N* = 23)

Perceived Stress

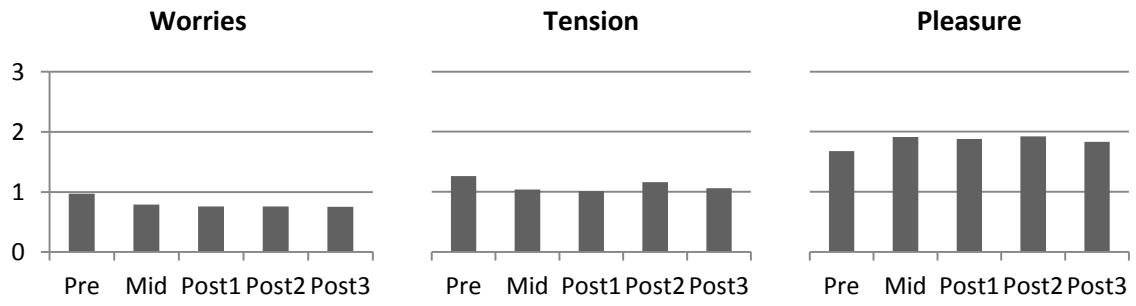

Figure 50 Means Worries, Tension and Pleasure (PSQ, *N* = 23)

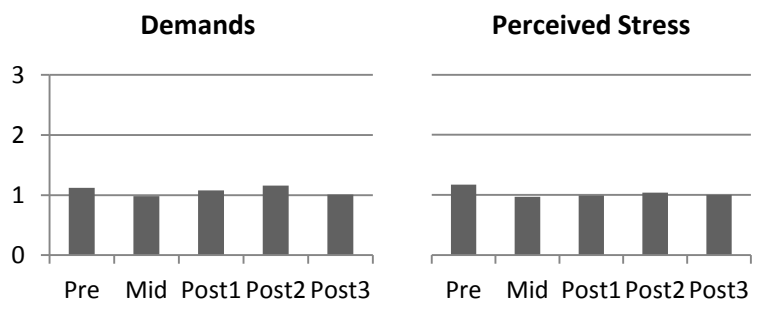

Figure 51 Means Demands and Perceived Stress in total (PSQ, *N* = 23)

Work-Engagement

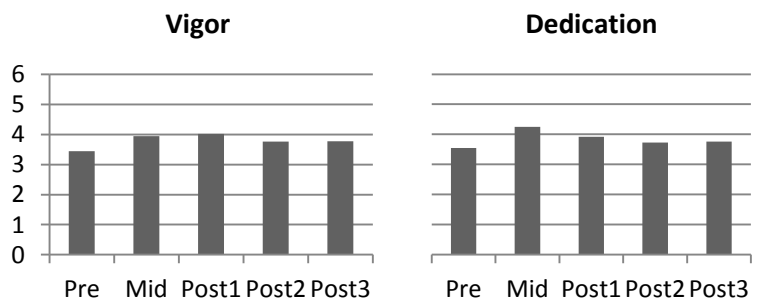

Figure 52 Vigor and Dedication (UWES9, *N* = 23)

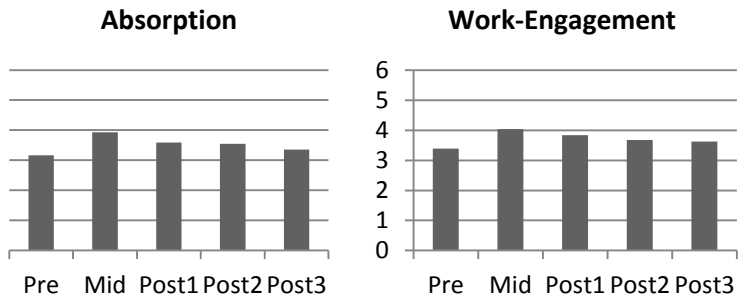

Figure 53 Means Absorption and Work-Engagement in total (UWES9, *N* = 23)

Big Five

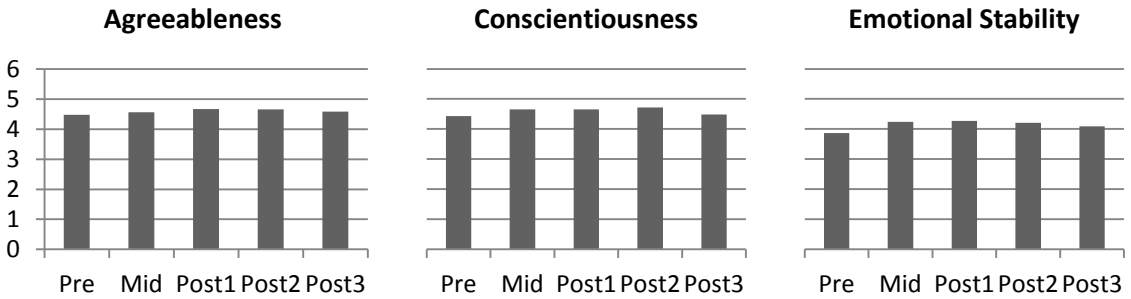

Figure 54 Means Agreeableness, Conscientiousness and Emotional Stability (TIPI-G, *N* = 23)

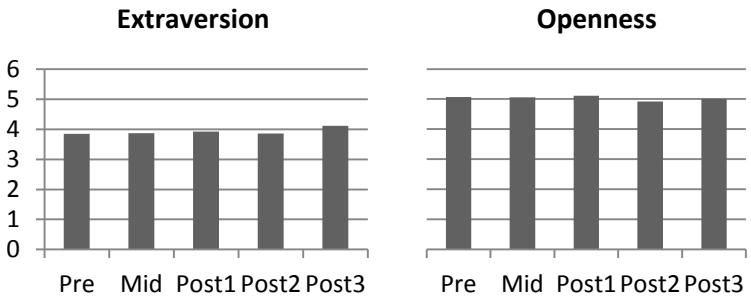

Figure 55 Means Extraversion and Openness to Experience (TIPI-G, *N* = 23)

4.11.6 Motivation, Satisfaction and Training Success Evaluated by the Participants

Table 8 Motivation, Satisfaction and Training Success Evaluated by the Participants (*N* = 18) on a Rating Scale from 0 to 4

	mean	standard deviation
Motivation		
1. I was interested in the topic of the training.	3.94	.24
2. I wanted to inform myself about the topic.	3.72	.58
3. I wanted to support the study.	3.33	.77
4. I was looking for help for coping with the burdens of daily life.	2.28	.96
5. I wanted to meet other people.	1.39	.78
6. I was just curious.	2.61	1.24
7. I just wanted to get out.	.67	.84
8. I wanted to learn techniques that I could apply in daily life.	3.44	.71
Satisfaction – How satisfied were you with…		
1. the topics the training covered?	3.78	.43
2. the atmosphere in the training group?	3.78	.55
3. the way the trainer presented the topics?	3.56	.51
4. the way the trainer guided the group?	3.78	.73
5. the handouts you received?	3.78	.43
6. the way the trainer responded to you personally?	3.67	.59
7. your own training success?	3.06	.73
8. the training all in all?	3.5	.51
Training Success and Other Questions		
1. In general I find it easy to arrange my life-style so that it is healthy and beneficial.	2.61	.78
2. The training was interesting.	3.78	.43
3. I acquired new information in regard to the training topic.	3.44	.78
4. I was committed and active.	3.39	.61
5. The training helped me cope with demands.	2.88	1.05
6. By this training I could strengthen *sattva* in my life.	2.89	.96
7. The training contributed to maintaining and increasing my well-being.	2.94	.8
8. Attending the training was fun.	3.67	.49
9. I can apply what we learned in my daily life.	3.22	.88
10. The training fulfilled my expectations.	3.28	.83
11. Would you recommend this training to others?	100% yes	

4.11.7 The Daily Protocol

Table 9 The Daily Protocol

Studienteilnehmer-Code: S1-_____ Datum: ____ / ____ / 2013 Heute hatte ich Zeit für die Meditation: o ja / o nein

In welchem Ausmaß treffen folgende Aussagen heute auf Sie zu?	gar nicht	wenig	teils-teils	ziemlich	völlig
1. Auch wenn sich etwas nicht so entwickelt hat, wie ich es erwartet habe, fiel es mir leicht die neue Situation als Gegebenheit anzunehmen.					
2. Ich war vergnügt.					
3. Ich war traurig.					
4. Ich war anderen gegenüber tolerant.					
5. Ich fühlte mich erleuchtet durch die Energie des Kosmos, Gottes oder der Natur.					
6. Meine Entschlossenheit war unerschütterlich.					
7. Ich habe mir irgendeine Art Luxus gewünscht.					
8. Ich war fleißig, habe aber darauf geachtet, mich nicht übermäßig zu erschöpfen.					
9. Ich bin Aufgaben, die tiefgründiges Nachdenken erfordert hätten, aus dem Weg gegangen.					
10. Ich war übermäßig aktiv oder bemüht.					
11. Mir fehlte es an Willenskraft.					
12. Ich habe stürmisch gearbeitet.					
13. Ich habe versucht andere zu beeindrucken.					
14. Meine Gedanken waren hektisch.					
15. Ich war etwas gierig.					
16. Ich habe Aufgaben vor mir her geschoben.					
17. Ich war träge.					
18. Ich fühlte mich hoffnungslos.					
19. Ich war anderen gegenüber etwas garstig.					
20. Ich habe mich ruhelos gefühlt.					
21. Ich habe sorgfältig gearbeitet.					

Anmerkungen/Besonderheiten:

4.11.8 Self-regulation Scale

Items marked with „(i)“ need to be inverted.

Table 10 Self-regulation scale (Schwarzer, 1999)

	1 stimme gar nicht zu	2 stimmt kaum	3 stimmt eher	4 stimmt genau
1. Ich kann mich lange Zeit auf eine Sache konzentrieren, wenn es nötig ist.				
2. Wenn ich von einer Sache abgelenkt werde, komme ich schnell wieder zum Thema zurück.				
3. Wenn ich bei einer Tätigkeit zu aufgeregt werde, kann ich mich so beruhigen, daß ich bald wieder weitermachen kann.				
4. Wenn bei einer Tätigkeit eine sachliche Haltung nötig ist, kann ich meine Gefühle unter Kontrolle bringen.				
5. Wenn störende Gedanken auftreten, kann ich sie nur schwer von mir wegschieben. (i)				
6. Ich kann es verhindern, daß die Gedanken ständig von meiner Aufgabe abschweifen.				
7. Wenn ich Sorgen habe, kann ich mich nicht auf eine Tätigkeit konzentrieren. (i)				
8. Nach einer Unterbrechung finde ich problemlos zu einer konzentrierten Arbeitsweise zurück.				
9. Alle möglichen Gedanken oder Gefühle lassen mir einfach keine Ruhe zum Arbeiten. (i).				
10. Ich behalte mein Ziel im Auge und lasse mich nicht vom Weg abbringen.				

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5. Conclusion

5.1 Conclusion and Outlook

Due to the rudimentary research that has focused on the *guna* model before this thesis, the research questions of this dissertation started at the very beginning: how can the *gunas* be defined and measured? How can *sattva* be strengthened and the influence of *rajas* and *tamas* be diminished? Answering these questions has brought research on the *guna* model a significant step further – and, as it is often the case, has led to new questions.

The three *gunas* – *sattva*, *rajas* and *tamas* – are, according to the ancient Indian philosophical system of *Sankhya*, three energies that determine the experience and behavior of everyone. According to which of them is strongest, experience and behavior change. Thereby it is most beneficial for well-being if *sattva* is the strongest *guna*. Measuring the *gunas* with their wide range of effects can be accomplished by considering different areas of influence separately – for example the *gunas* in motivation, emotion or cognition. *Sattva* can be increased and *rajas* and *tamas* decreased by a training composed of meditation, mental stress-management, balancing work and recuperation, managing will-power, and mindful decision-making and social behavior.

The studies in this thesis have provided first answers to fundamental questions like "What are the *gunas*, how can they be measured and influenced?" and thereby empirically supported the *tri-guna* model. This has made room for more detailed questions about the *tri-guna* model which could be the focus of future research. These questions can be summarized into two groups – questions elaborating on the model itself and questions considering *guna* interventions. Concerning the *tri-guna* model, many of the postulated connections between variables connected through one specific *guna*, between the *gunas* themselves and between the *gunas* and other variables are supported by empirical data. Still, many more of these relationships could be examined at all or in more detail. At the moment, our *tri-guna* working model lists qualities associated with each *guna* in a manner aimed at a comprehensive description that overcomes the limitations of different researchers focusing on separate aspects of the *gunas* without first establishing a comprehensive model. As a next step, separate aspects of the model, for example the *gunas* and motivation, could come to the fore again, however, always in relation to the comprehensive model. Also, it could be determined which aspects of the *guna* description are more essential than others. Now, we have a long list of characteristics of each *guna* in different factors of behavior, for example social behavior. It would be fruitive to examine which of these characteristics in the respective behavioral factor are more crucial to each *guna* than others. For example, one might ask, what is more

characteristic for *tamasic* social behavior – quarrelsomeness, insensitivity or being self-defensive? Furthermore, the Tri-Guna-Scales now make it possible to measure the *gunas* in different aspects of behavior (for example emotions and social behavior). As our studies show, the relations of the *gunas* to other variables are somewhat different according to the behavioral facet of the *gunas* one is looking at. Examining the different relationships between the *gunas* in the different facets of behavior to other variables would be another feasible area for future research.

In regard to interventions there is much to be asked. We have evidence that increasing *sattva* increases psychological health and that an intervention that addresses the characteristics of the *gunas* in different behavioral factors is effective. Now, it would be worthwhile to examine specific interventions. Which are more effective than others and which are more effective for which kind of people? Which behavior factors have a greater influence on the *gunas* than others and therefore need to be subject of any intervention with greater emphasis?

In summary, the *tri-guna* model provides a useful integrative approach to well-being, integrating different aspects of well-being that are as of yet usually examined individually, but can be brought together in the framework of the *gunas*. The *tri-guna* model addresses hedonic aspects of well-being that are the focus of the research of Diener and his colleagues (e.g. Diener & Ryan, 2009) describing the emotions and appraisals that are connected to each *guna* and how to increase hedonic well-being by strengthening *sattva*. Eudaimonic dimensions of well-being are considered as at least equally important, with the literature on the *gunas* stressing the dimensions of eudaimonic well-being singled out by Ryff (2014) and more, for example an explicit spiritual dimension. In the philosophical framework of the *gunas* (*Sankhya*), the seemingly contrary ultimate goals of happiness (hedonism) and realiszing one's potential (eudaimonia) are in fact one, since the overarching goal of *Sankhya* is attaining a state of mind of realizing the true nature of the self, which – when it is attained – is simultaneously described as the highest possible experience of happiness.

Altogether, although it is so old it can be called ancient, the *guna* model is as relevant as ever for preventing psychological disease and promoting well-being.

5.2 References

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Eidesstaatliche Erklärung

Hiermit erkläre ich, dass ich die vorliegende Arbeit selbstständig verfasst und keine anderen als die angegebenen Hilfsmittel verwendet habe.

_____

Maika Puta, Berlin, den 29.10.2015