Cover Page

Universiteit Leiden

The handle http://hdl.handle.net/1887/39174 holds various files of this Leiden University dissertation.

Author: Mennes, M.A.
Title: De Theatro Motivarum, Motivation: In Search of Essentials. Research on a Theoretical Model of the Process of Motivation and on Critical Determinants of Interference
Issue Date: 2016-06-14

Chapter 10
Summary

10.1. Introduction

This dissertation finds its raison d'être in the observation that precious few elementary new insights have been generated to prevent the human condition from recurrent suffering throughout the course of its history, ranging from atrocities of war, discrimination, genocide to poverty, exploitation and excessive injustice.

If these acts, in spite of their content and nature, are considered to be expressions of man's will to intervene in his surrounding, research and theory on these phenomena can be defined within a socio-psychological tradition, and confined to a field of study conceptualized in literature as 'Human Motivation'.

Precious few elementary new insights have been generated to prevent a recurrence of human suffering through atrocities of war, genocide, poverty and have the human condition thrive and prosper in a better world.

The purpose of this study has been to initiate further thought and understanding in the field of Human Motivation. It's objective has been two-fold:

- The dissertation aimed, as its primary objective, at providing insights into the concept of Motivation,
- to unveil elementary processes involved in addressing Motivation.

Research and theory aimed at providing knowledge and insights on recurrence of phenomena of war, discrimination, genocide, injustice, exploitation and poverty, can be defined within a socio-psychological tradition and confined to a field of study conceptualized in literature as 'Human Motivation'.

To this aim a fundamental departure from common practice and from a traditional scientific approach has been taken in generating the insights that are at the core of the study and of its empirical research and validation.

In the second half of the twentieth century, Empirical falsifiability became the criterion of the scientific character of theories. Where 'scientific philosophy' expanded beyond its boundaries towards a restricted 'scientific methodology', deductive inference became predominant and inductive theory-formation was gradually largely abandoned from scientific practice.

This dissertation seeks to re-integrate inductive and deductive inference strategies. The study proclaims a reintroduction of inductive inference in the generation of explanatory theoretical constructs, or theoretical 'Models'. Where these theoretical Models lead to clearly defined and constrained hypotheses, they constitute not a departure from, but rather a re-enrichment of hypothetico-deductive tradition. In lieu of observing isolated hypotheses, as emphasized in a traditional hypothetico-deductive approach, this study proposes a foundation, or embedment, of hypotheses in an inductively inferred theoretical

Model, which provides an explanatory framework for phenomena these hypotheses seek to validate. Support from empirical research for an embedded hypothesis thus reflects on the robustness of the explanatory framework or Model. Multiple hypotheses, within multiple empirical studies, embedded in a common explanatory Model, further add to its authority.

The rationale behind the re-integration of inductive and deductive inference practice constitute the 'Pre-Fundamentals' of this study, as elaborated on in Chapter 1.

A number of restrictions to the study, or 'Fundamental Assumptions', were formulated subsequently, Chapter 2. Within the concept of Motivation a distinction was made into a 'Process of Motivation' that manifests itself within an 'Individual', and a process aimed at addressing, or interfering in Motivation by an external 'Actor-Intervener', defined as a 'Process of Interference'. Within the Process of Interference three distinct 'Determinants' were defined:

- 'Conditions', initiating 'Intervention' in the Process of Motivation;
- 'Competencies', enabling these Conditions;
- 'Instruments', to facilitate these Competencies.

This sequential reduction restricted the course of this study to a four-fold approach in the analysis.

Thus, in Chapter 2.5., the Problem Statement of this dissertation was formulated, reflecting the four-fold approach in analyzing the Process of Motivation, distinct from the Process of Interference in its three Determinants, to obtain the two-fold objective of the dissertation.

> *A re-introduction of inductive inference in generation of explanatory theoretical Models, will lead to enrichment of a current hypothetico-deductive tradition in the social sciences, the study of human motivation in particular.*
>
> *In lieu of observing isolated hypotheses, as emphasized in a traditional hypothetico-deductive approach, hypotheses are to be embedded in an inductively inferred theoretical Model, which provides an explanatory framework for phenomena these hypotheses seek to validate.*
>
> *Support from empirical research for an embedded hypothesis thus reflects on the robustness of the explanatory Model. Multiple hypotheses, within multiple empirical studies, embedded in a common explanatory Model further add to its authority.*

> *Human Motivation conceptually consists of two distinct processes: a Process of Motivation that manifests itself within an Individual, and a process aimed at addressing, or interfering in Motivation by an external Actor-Intervener, defined as a Process of Interference.*

> *Failure to distinguish conceptually between a Process of Motivation and a Process of Interference in current literature has caused profound Conceptual Confusion in research and theory on Human Motivation.*

Insights into the Process of Motivation were to be provided by means of an explanatory theoretical Model, an embedment in literature, and empirical validation of hypotheses derived from the explanatory framework of the Model, thus reflecting on its robustness.

Likewise, insights into the Process of Interference and its Determinants were to be provided by means of a theoretical Model, and empirical validation of derived hypotheses. However, as all Determinants were theoretically derived from the Model of Motivation, hypotheses associated to each Determinant were to provide not only insights into the Process of Interference, but would also provide a means of verification of the theoretical

Model of Motivation where multiple empirical studies, derived from a common explanatory Model, were assumed to further add to its authority.

The approach, then, has led to a four-fold sequence in hypothesis-testing, covering:

- The Process of Motivation,
- Conditions initiating the Process of Motivation,
- Competencies enabling these Conditions,
- Instruments providing the means for these Competencies to occur.

10.2. The Process of Motivation

In the Problem Statement, formulated Chapter 2.5., this dissertation was to provide first, as its primary objective, insights into the Process of Motivation, by means of a theoretical Model, an embedment in current literature, and empirical research.

Initially, the Process of Motivation was defined as a Process that intentionally orients the Individual within a Situation. A series of Assumptions led to a representation of this Process as a vector, assuming separate conceptual entities emerge when a change in the properties of this vector would occur. From these Assumptions, in Chapter 3.2., Motivation was presented as a Process progressing in distinct, consecutive steps, or so-called 'Stages', each Stage differentiated from the other on the properties of its vector.

The theoretical Model of Motivation, in Chapter 3.3., was assumed to evolve around an objective, and to proceed in twenty-four consecutive Stages that could be organized according to eight distinct groups or 'Phases'.

- *A Phase of Expectancies:* a first Phase was assumed to be characterized by a mental evaluative process, where, in an iterative search, gradually the objective was defined. In a cyclical assessment the Individual determined the effort needed to reach the objective, and the objective and subjective revenues the Individual was to expect from this achievement
- *A Phase of Effort:* this process of mentally balancing expected gains and losses, in a number of cases led to an actual investment: in this Phase the Individual was to proceed into action.
- *A Phase of Internally Evoked Self-Assessment:* these concrete activities, or behaviors, were subsequently assessed on their effectiveness of reaching the objective set, in terms of perceived Achievement and Failure, or Satisfaction and Frustration. And this third Phase, in turn, led to a re-assessment of the parameters initially set in a first Phase of Expectancies, thus turning the process of Motivation into a cyclical system.
- *A Phase of Reality:* Within this cocooned balance, however, an external unexpected event was assumed likely to occur and to disrupt this entirely self-regulated process. 'Reality' was defined as the external surrounding of the Individual affecting the process of Motivation. The event was assessed on its perceived importance, in terms of 'Significance of Reality'.
- *A Phase of Impact:* depending on its 'Significance', assessed in a 'Phase of Reality', effects of the event on the process were evaluated in a 'Phase of Impact'. Both assessments were often tightly related, with a modest Significance of Reality having low Impact, and a high Significance resulting in high Impact.

- *A Phase of Externally Evoked Self-Assessment:* in a first response, initial parameters defined in a Phase of Expectancies were re-examined on their effectiveness.
- *A Phase of Anticipated Change:* in a second response, an assessment was made of one's willingness to make adjustments to these initial settings.
- *A Phase of Dedication:* in the eighth and last Phase of the Process, the Individual was assumed to assess, as a consequence of previous Phases, perceived support from Reality, which in turn, led to a re-setting of initial parameters in the first Phase of Expectancies, thus turning the Process of Motivation into a cyclical process.

Human Motivation, in short, was perceived of as an 'inner dialogue', a stepwise, sequential Process of eight distinct Phases, largely evaluative in nature, where the Individual attempts to reach and secure an objective set, and to limit the effects of outside interferences. The importance, or 'Significance' attached to the objective, further regulated this process. Mechanisms of Anticipation, Representation and Coping aimed at reducing Impact, or 'Discrepancy', between the objective and a perceived Reality.

> *The Process of Motivation is assumed to be an intentional, oriented activity aimed at reaching and fulfilling an objective set. The Process is conceived of as an 'inner dialogue', largely evaluative in nature, where the Individual attempts to reach and secure an objective set, and to limit the effects of outside interferences. The Process is assumed to proceed in 24 distinct, consecutive steps or so-called 'Stages', which can be organized in 8 groups or 'Phases'.*

This theoretical Model of Motivation was reflected on through an analysis of current literature in Chapter 4. Elements from the model were connected to findings from literature, provided largely through empirical research. Thus an embedment could be obtained within an existing body of knowledge, with its findings secured with empirically validated data. Following the analysis in Chapter 4.4., a vast majority of current theories from literature on human Motivation was found to be covered within the 24 Stages of the Model. The analysis of the empirical research in Chapter 4.5. provided sustained confirmation for the various Phases of the Model and their assumed effects on Motivation. As a general conclusion, then, the Model of Motivation appeared to have been supported by a majority of theories and research findings.

In a final observation, from a slightly different perspective, it was found that in the attempt at coverage and embedment, the Model of Motivation provided a comprehensive conceptual framework for classification of current theories on human motivation.

> *The Model of Motivation provides a comprehensive conceptual framework for classification of current theories of Human Motivation in literature.*

Following the Problem Statement, Chapter 2.5., an empirical research was to provide evidence of the elementary constructs, from the Model, in terms of components and their respective items, capturing the Process of Motivation, thus providing empirical evidence in support of the Model of Motivation. Following observations made in Chapter 5.2., critical elements associated with the Model of Motivation were captured in hypotheses provided Chapter 5.4.3.

The empirical research in Chapter 5.5. was performed in two stages.

In Study 1, Chapter 5.5.1., aimed at a verification of hypothesis *H1A*, formulated

Chapter 5.4.3., it was hypothesized that the elementary components reduced from a data-set, would include all items associated with a theoretical categorization of the most important Phases of the Model, i.e. Phases 3 and 8, as suggested as a primal hypothesis in Chapter 3.3.4. A primary Core Data-set, was reduced to elementary components by means of PCA, using nonorthogonal rotation techniques. After eliminating components that did not meet internal consistency reliability standards, two primary components were isolated, designated as DEDICAT *(Initial eigenvalues 11.836, Alpha coefficient for final components .90),* and ACHIEV *(Initial eigenvalues 3.473, Alpha coefficient for final components .78)*, which were found to include all items associated with both Phases 3 and 8 from the Model of Motivation, thus providing confirmation for hypothesis *H1A.*

In Study 2, Chapter 5.5.2., a comparative analysis was performed between both primary components DEDICAT and ACHIEV, and those hypothetically defined prior to the analysis to operationalize Phase 3 and Phase 8 from the Model of Motivation, to obtain evidence if both primary components were the elementary constructs capturing the Process of Motivation, as called for in the Problem Statement. A perfect match was obtained, in support of hypothesis *H1B*, Chapter 5.4.3., where both clusters of items matched completely, in a comparison between clusters of items capturing Phase 3, and Phase 8, respectively, within the Model of Motivation, and those obtained from the PCA designated as component DEDICAT and ACHIEV. In a Comparative Analysis of Matrices, both comparisons generated a sensitivity and specificity of 100%, resulting in Φ and λ scores significant at *p<.01.*

A further verification of these findings was pursued:

- In Study 3, Chapter 5.6.1., by hypothesizing that these findings would be unrelated to performance, formulated in hypothesis *H2A,* Chapter 5.4.3., where a partial confirmation was obtained; Component DEDICAT was found not to meet criteria set, with λ scores below a *p<.05* significance level. For component ACHIEV a match was obtained for Higher and Lower Ranking Performer samples, with Φ and λ scores significant at *p<.05.*
- In Study 4, Chapter 5.6.2., by hypothesizing that these findings would be unrelated to cultural influences, hypothesis *H2B*, Chapter 5.4.3., with confirming evidence obtained at three different locations world-wide: in Malaysia, South-Africa and the USA; A near complete match was obtained between component DEDICAT and a complete match between component ACHIEV and components that emerged from the PCA in all three samples. λ scores were significant at a *p<.05* significance level, Φ scores at a *p<.001.*
- In Study 5, Chapter 5.6.3., by hypothesizing that these findings would be unrelated to company-related influences, hypothesis *H2C*, Chapter 5.4.3., with confirming evidence obtained in companies differentiated according to company-type, company-profile and company-market position. As in previous samples, the Company-related Data samples provided a near perfect match between component DEDICAT as emerged from the Core Data sample and components that emerged from the PCA in all samples. Φ scores were significant at *p<.001*, λ scores nearly all at a *p<.05*. Component ACHIEV produced largely comparable results.

Study 6, Chapter 5.7.1. was aimed at defining a suitable course of action in generating factor scores to provide a means for an adequate measurement of the highly subjective construct.

In conclusion, with hypotheses *H1A* and *H1B* confirmed, and substantial evidence supporting hypotheses *H2A, H2B* and *H2C*, following the statements made in Chapter 5.4.3., it was found that both components DEDICAT and ACHIEV could be designated as the essential constructs in capturing the Process of Motivation.

Following the Problem Statement defined in Chapter 2.5. the empirical research provided evidence, then, that components DEDICAT and ACHIEV as obtained from the analysis, were indicative of Phases 3 and 8 of the Process of Motivation, and were the elementary constructs that capture the Process of Motivation, thus providing first empirical evidence in support of the Model of Motivation.

10.3. Conditions Initiating the Process of Motivation

Referring to the Problem Statement, Chapter 2.5., from these insights on the Process of Motivation, the dissertation was to unveil elementary processes involved in addressing Motivation, by subsequently providing insights in the Process of Interference.

Providing insights in the Process of Interference was to consist of: first, insights into Conditions necessary for effects to occur within the Process of Motivation, by means of a theoretical Model and empirical research.

In the theoretical Model, presented Chapter 6.2.2., four Conditions were assumed to be essential in addressing Motivation:

- Perceived Significance of the Goal, or objective
- Perceived Significance of the Actor-Intervener
- Perceived Support
- Perceived (Mis)-Match in Mutual Perceptions

> *Four Conditions are needed to initiate optimal Interference in the Process of Motivation:*
>
> - *Perceived Significance of the Goal, or objective*
> - *Perceived Significance of the Actor-Intervener*
> - *Perceived Support*
> - *Perceived (Mis)-Match in Mutual Perceptions*

Following the Problem Statement, Chapter 2.5., an empirical research was to provide evidence of the relation between the isolated constructs operationalizing the Process of Motivation and concepts presumed to be indicative of these four Conditions. Following observations made in Chapter 6.2.3., critical elements associated with the theoretical Model were captured in hypotheses provided Chapter 6.4.3.

The empirical research in Chapter 6.5. was performed in three consecutive stages.

In Study 7, Chapter 6.5.1. an exploratory research was performed, aimed at providing an Inventory of all aspects, or so-called 'Elements', that could possibly affect an

Intervention in the Process of Motivation. Panel-interviews with students, university lecturers, business consultants and managers, complemented by questionnaires and findings from literature, produced an Inventory containing 482 Elements. From the Inventory a questionnaire was designed consisting of 147 questions and 22 accompanying questions, covering an abbreviated set of 380 Elements, to be used in two subsequent Studies aimed at a validation of Conditions.

It was assumed that a number of those Elements would be active in instigating Motivation, thus would display a relation with constructs DEDICAT and ACHIEV obtained from Chapter 5, capturing the Process of Motivation. In Study 8, Chapter 6.5.2. a confirmation could be found for these assumptions, as formulated in hypothesis *H1*, Chapter 6.4.3., where 52 Elements were found to be correlated with factor scores associated either to components DEDICAT or ACHIEV, or both, in a bivariate analysis performed using a standard Pearson product-moment correlation, using a $\pm$ *.300* criterion. All correlates >-.*300* were significant at the *.001* level, *two-tailed*. 41 Elements had correlates ranging between -*.300* and -*.400*, with 11 Elements correlates exceeding -*.400*. Furthermore, as was observed in the Model of Motivation, notably Chapter 3.3.2. and Chapter 6.4.3., it was assumed that a difference would occur in the extent at which both components were found to be affected by those Elements, where a considerable higher proportion of Elements were expected to display a correlation with component DEDICAT, than with component ACHIEV. A confirmation was found for these assumptions, formulated in hypothesis *H2*, defined Chapter 6.4.3, with an observation, however, that no correlations emerged exceeding the $\pm$ .300 criterion for a valid indication in defining a relationship with component ACHIEV. Pearson product-moment correlations with component ACHIEV were much less pronounced with only 17 Elements emerging with correlates ranging from -.118 to -.240. As such, it appeared from the analysis that, although relations did appear to exist, no Elements, operationalized in the questionnaire obtained from Study 7, revealed a relation that met the $\pm$ *.300* criterion with items assumed to represent Phase 3 of the Process of Motivation.

As these Elements displayed a correlation with constructs capturing Motivation (i.e. component DEDICAT), it was assumed these Elements were to be related to aspects of Motivation. Where Motivation within the observed setting was assumed to be initiated by one or more of the four Conditions obtained from the inductive inference, it was assumed that a vast majority of these Elements had to be related directly or indirectly to one or more of these four Conditions. A verification of these findings was obtained in Study 9, Chapter 6.5.3., confirming hypothesis *H3A,* defined Chapter 6.4.3., where, from Elements displaying a correlation with component DEDICAT, 7 independent observers categorized 44 from the 52 Elements as related to the assumed Conditions. Thus, a vast majority of 84.6% appeared to be directly or indirectly related to one or more Conditions, hence could be explained in terms of enabling properties associated to one or more of these Conditions. However, the data failed to provide a confirmation for hypothesis *H3B,* Chapter 6.4.3., aimed at correlations with ACHIEV, due to a lack of substantial items correlating with the construct as found in Study 8.

In conclusion, with hypotheses *H1* and *H2* confirmed, and substantial evidence supporting hypothesis *H3A*, following the statements made in Chapter 6.4.3., it was found

that correlational evidence was obtained for the assumed relation.

Following the Problem Statement defined in Chapter 2.5., then, the empirical research provided exploratory and descriptive correlational evidence for a relation between constructs capturing Motivation and Conditions enabling an adequate Intervention within the Process of Motivation.

In addition, these findings provided secondary empirical evidence in support of the Model of Motivation, from which these Conditions were derived.

10.4. Competencies Enabling Conditions

Referring to the Problem Statement, Chapter 2.5., from insights on the Process of Motivation, the dissertation was to unveil elementary processes involved in addressing Motivation, by providing insights in the Process of Interference.

Providing insights in the Process of Interference was to consist of: secondly, insights in Competencies initiating the Conditions to come into effect, by means of a theoretical Model and empirical research.

The theoretical Model on Competencies was presented Chapter 7.2.

Conditions initiating the Process of Interference were identified by reducing, through a number of Assumptions, the vast universe of possible options in which the Process of Interference could be expressed, to an 8x8 matrix of possible Intervention Strategies. Within this matrix, a recurrent pattern and algorithm was observed, that revealed the 8x8 Intervention Strategies, which conceptualized the Process of Interference in its variety of manifestations, could be divided into two antagonistic approaches. These two basic approaches in addressing, or 'Management' of Motivation were defined as two principal 'Modalities': an 'Extrinsic Modality' and an 'Intrinsic Modality' in Management of Motivation, both consisting of four distinct levels of Intervention.

From both sets of four Intervention levels, a single level was observed, that was assumed to provide the most favorable scenario within each Modality for addressing the Process of Motivation.

Thus, two optimal Modalities emerged in Management of Motivation:

- An Extrinsic Modality in Management of Motivation, providing substantial opportunities for Control, at the expense, however, of Productivity. From four levels of Intervention, the Intervention Strategy addressing both a Phase of Expectancies and a Phase of Internally Evoked Self-Assessment (level 4) appeared to yield highest effects.

> *There are two Modalities in Management of Motivation:*
>
> - *An Extrinsic Modality, providing substantial opportunities for Control, at the expense, however, of Productivity*
> - *An Intrinsic Modality, leading to high Productivity, at the expense, however, of limited opportunities for Control*

- An Intrinsic Modality in Management of Motivation, leading to high Productivity, at the expense, however, of only limited opportunities to apply Control. From four levels of Intervention, the Intervention Strategy that withholds addressing any Phase (level 8) appeared to yield highest results

From the analysis two distinct sets of Competencies emerged:

- For an optimal Extrinsic Modality in Management of Motivation:
  - A single Extrinsic Attitudinal Competency, defined as: Dignity
  - Four Extrinsic Technical Competencies, defined as:
    - A Technical Competency of Providing Extrinsic Preconditions,
    - A Technical Competency of Clarifying Extrinsic Outcomes,
    - A Technical Competency of Providing Active Assistance,
    - A Technical Competency of Providing Active Feedback.

An optimal Extrinsic Modality in Management of Motivation consists of:

- *An Attitudinal Competency: defined as Dignity*
- *Four Technical Competencies, defined as:*
  - *A Technical Competency of Providing Extrinsic Preconditions,*
  - *A Technical Competency of Clarifying Extrinsic Outcomes,*
  - *A Technical Competency of Providing Active Assistance,*
  - *A Technical Competency of Providing Active Feedback.*

- For an optimal Intrinsic Modality in Management of Motivation:
  - Three Intrinsic Attitudinal Competencies: Respect, Dignity, Trust
  - Four Intrinsic Technical Competencies, defined as:
    - A Technical Competency of Clarifying Intrinsic Preconditions,
    - A Technical Competency of Clarifying Intrinsic Outcomes,
    - A Technical Competency of Providing Passive Assistance,
    - A Technical Competency of Providing Passive Feedback.

An optimal Intrinsic Modality in Management of Motivation consists of:

- *Three Attitudinal Competencies, defined as: Respect, Dignity, Trust*
- *Four Technical Competencies, defined as:*
  - *A Technical Competency of Clarifying Intrinsic Preconditions,*
  - *A Technical Competency of Clarifying Intrinsic Outcomes,*
  - *A Technical Competency of Providing Passive Assistance,*
  - *A Technical Competency of Providing Passive Feedback.*

Following the Problem Statement, Chapter 2.5., an empirical research was to provide evidence of the relation between concepts presumed to be indicative of Conditions and concepts operationalizing these various Competencies. Following observations made in Chapter 7.2.3., critical elements associated with the theoretical Model were captured in hypotheses provided Chapter 7.4.3.

The empirical research in Chapter 7.5. was performed in two stages:

Two Conditions were assumed could be targeted by Competencies, defined as Perceived Support and Perceived (Mis)-Match in Mutual Perceptions. Both targeted Conditions were operationalized in a single concept, in order to avoid co-variation and conceptual overlap. First Preliminary Analyses in Study 10, Chapter 7.5.1., were aimed at a verification of this single concept:

- First of its presumed suitability capturing the distinct Conditions. The analysis confirmed the proposed single concept to be an adequate representation of both targeted Conditions. A regression analysis was performed to assess the relationship between a variable CAPTURED_CONDITIONS as dependent or response variable, and both Conditions PERCEIVED_SUPPORT *(R^2=.558, $F(2,156)$=98.35, p<.001),* and PERCEIVED_MATCH separately *(R^2=.071, $F(2,150)$=5.77, p<.01)*, each with their distinct explanatory variables, with reference to Table 7.2.

- Second, of the relation between the single concept and Motivation as expressed in factor scores, following the analysis in Chapter 5. A simple regression was performed with a standard Pearson product-moment correlation to assess the relationship between variable CAPTURED_CONDITIONS and both factor scores DEDICAT and ACHIEV capturing Motivation. In the analysis a distinction was made between both factor scores. An assumed relation could be established with factor score DEDICAT *(R^2=.099, $F(1,158)$=17.30, p<.001),* however in regressing the concept variable CAPTURED_CONDITIONS onto factor score ACHIEV, no relation seemed apparent *(R^2=.012, $F(1,158)$=1.97, p=.163),* with reference to Table 7.3., with notice that this finding was in line with assumptions made in Chapter 7.4.3.

Following the criteria defined in Chapter 7.4.3., on suitability of the single concept as an intermediate variable, the analysis assumed both inherent relations could be established.

Thus, in Study 11 Chapter 7.5.2., a subsequent analysis could be made to provide evidence for a relation to exist between the single concept that was to represent the occurrence of a successful Intervention and more specific concepts operationalizing Attitudinal and Technical Competencies, in both Extrinsic and Intrinsic Modalities. The data-set consisted of three sets obtained at three locations within a single Company, with sample size *n=550.* Multiple regression analysis was performed and from the data a confirmation could be obtained for four prominent hypotheses defined in Chapter 7.4.3., in verifying the relations between Conditions assumed to be targeted and the various Competencies:

In Extrinsic Management of Motivation:
- Confirmation was obtained for hypothesis *H1A,* defined Chapter 7.4.3., where it was assumed that the Extrinsic Attitudinal Competency was significantly related to the single concept capturing targeted Conditions. *(R^2=.580, $F(2,527)$=363.73, p<.001).* Referring to Table 7.5., where results are provided of the regression analysis of the single variable CAPTURED_CONDITIONS on the single Extrinsic Attitudinal Competency, previously mentioned.

- Confirmation was obtained for hypothesis *H1B,* defined Chapter 7.4.3., suggesting that Extrinsic Technical Competencies were indeed significantly related to the single concept capturing the targeted Conditions *(R^2=.726, $F(8,496)=164.00$, $p<.001$).* Referring to Table 7.6. for an overview of the regression analysis of the single variable CAPTURED_CONDITIONS on the four Extrinsic Technical Competencies, previously mentioned, with a stepwise hierarchical procedure including successive Competencies.
  Within the Extrinsic Modality, a Technical Competency of Clarifying Extrinsic Outcomes, accounted for most of total variance *(ΔR^2=.469, $p<.001$,* as detailed in Table 7.6.). When Attitudinal and Technical Competencies were combined, significance of individual parameters dropped, suggesting an overlap in the total proportion of variance accounted for.

In Intrinsic Management of Motivation:
- Confirmation was obtained for hypothesis *H2A,* defined Chapter 7.4.3., assuming that Intrinsic Attitudinal Competencies were significantly related to the concept capturing both targeted Conditions *(R^2=.592, $F(4,522)=189.75$, $p<.001$).* Reference is made to Table 7.8., where results are summarized of the regression analysis of the single variable CAPTURED_CONDITIONS on Intrinsic Attitudinal Competencies, including a stepwise hierarchical procedure over successive Competencies. In the analysis the three Intrinsic Attitudinal Competencies, previously mentioned, were considered as independent variables.
- Confirmation was found for hypothesis *H2B,* defined Chapter 7.4.3., with the assumption that Intrinsic Technical Competencies were significantly related to the single concept in enabling the Conditions favorable to induce Intervention in the Process of Motivation. All parameters contributed significantly to explaining the outcome, where the model provided a significant fit of the data overall, with R^2=.653, $F(7,520)=139.83$, $p<.001$. Reference is made to Table 7.9. for a comprehensive overview of the regression analysis of the single variable CAPTURED_CONDITIONS on Intrinsic Technical Competencies including a stepwise hierarchical procedure on successive Competencies. The gradual inclusion of parameters associated to the four Competencies, resulted in a successively significant contribution of the distinct explanatory variables, with at least one variable operationalizing each Competency providing a significant contribution to predicting, or explaining, the outcome variable. In the analysis the four Intrinsic Technical Competencies, previously mentioned, were used as independent variables.
  In contrast with Extrinsic Technical Competencies, within the Intrinsic Modality, a Technical Competency of Clarifying Intrinsic Preconditions, was most prominent in contributing to total variance *(ΔR^2=.606, $p<.001$,* as deduced from Table 7.9.). As a general observation, when Attitudinal and Technical Competencies were combined, significance of individual parameters dropped, as in the Extrinsic setting, suggesting overlapping proportions of variance accounted for.

In conclusion, then, with hypotheses *H1A, H1B* and *H2A, H2B* confirmed, and following the statements made in Chapter 7.4.3., it was found that substantial evidence was obtained for establishing the assumed relations.

Following the Problem Statement defined in Chapter 2.5., then, the empirical research provided evidence for establishing a relation between concepts presumed to be indicative of Conditions enabling Motivation and concepts operationalizing these Competencies.

In addition, these findings provided secondary empirical evidence in support of the Model of Motivation, from which these Competencies were derived.

10.5. Instruments Providing the Means for Competencies to Occur

Referring to the Problem Statement, Chapter 2.5., from insights on the Process of Motivation, the dissertation was to unveil elementary processes involved in addressing Motivation, by providing insights in the Process of Interference.

Providing insights in the Process of Interference was to consist of: thirdly, insights in exemplary Instruments that provide the means for these Competencies to occur, through a theoretical Model and empirical research.

The theoretical Model on the Instruments was presented Chapter 8.2.2., where following Instruments emerged:

- An Intrinsic Attitudinal Instrument: a training setting provided for the Actor-Intervener, used as a principal vehicle aimed mainly at facilitating Intrinsic Attitudinal Competencies,
- An Intrinsic Technical Instrument: a structured interview provided to the Actor-Intervener aimed mainly at facilitating Intrinsic Technical Competencies.

Following the Problem Statement, Chapter 2.5., an empirical research was to provide evidence for a causal relation to exist between the isolated constructs operationalizing the Process of Motivation and concepts operationalizing these Instruments. Following observations made in Chapter 8.2.3., critical elements associated with the theoretical Model were captured in hypotheses provided Chapter 8.4.3.

An optimal research design was defined based on criteria of internal, external, construct and statistical validity.

The empirical research in Chapter 8.5. was performed in three separate Studies, from which one Study was presented in detail and two Studies in summarized format, referring to the original research Project detailed in Mennes (2016, *in press*).

Thus, a brief synopsis was provided of Study 12, Chapter 8.5.1.

Study 13, Chapter 8.5.2., consisted of a Comparative Analysis Independent Measures to provide evidence for the assumed causal relation between an application of Instruments and a successful addressing of the Process of Motivation. Study 13 provided a Diversification in Treatment Groups assessing the effects of a single, a two-fold, a three-fold and a four-fold, or higher, exposure to the treatment condition. An analysis of variance was performed and from the data a renewed confirmation could be obtained for the hypotheses formulated earlier in Study 12, capturing the essence of the assumption for a cause-and-effect relation. A confirmation was found for hypothesis *H1D,* formulated Chapter 8.4.3., where is was assumed that addressing the Process of Motivation by means of a four-fold, or higher, exposure to the Instruments would lead to a significantly higher Motivation within the Experimental Group as compared to Control Groups that would have had no exposure.

The Comparative Analysis in Study 13 was performed in three phases:

- In an introductory One-way independent ANOVA, testing a principal Experimental Group versus Control Group in both pretest and posttest settings, there was a significant effect of the treatment condition on Motivation as captured by factor score component DEDICAT, $F(1, 59)=5.97, p<.05, \eta^2=.092,$ on the posttest condition, as compared to $F(1, 70)=0.07, p=.79, \eta^2=.001,$ on the pretest condition.
- Subsequently, a Planned-Comparison for One-way independent ANOVA was performed, allowing for an analysis with Diversification in Treatment Groups. The Planned-Comparison was performed to assess effects of treatment in following analyses:
  - A Planned-Comparison for the combined Experimental Groups versus the Control Group, revealed a significant difference for the Experimental Groups after treatment, with $t(165)=2.14, p<.05$ (two-tailed), $\eta^2=.037,$ as captured by factor score component DEDICAT, whereas no significant differences appeared in the pretest setting, with $t(175)=-.16, p=.87$ (two-tailed), $\eta^2=.003.$
  - A Planned-Comparison for the separate Experimental Groups versus a Control Group, revealed a gradual effect on Motivation. Planned-Comparisons between the various Experimental Groups and the Control Group in the posttest setting obtained following results, with $t(165)=-1.60, p=.11$ (two-tailed), $\eta^2=.037$ for a single exposure to treatment, with $t(165)=-1.68, p=.10$ (two-tailed), $\eta^2=.037$ for a two-fold exposure, with $t(165)=-.82, p=.42$ (two-tailed), $\eta^2=.037$ for a three-fold exposure, and with $t(165)=-2.35, p<.05$ (two-tailed), $\eta^2=.037$ for a four-fold, or higher, exposure to treatment respectively, as opposed to non-significant results in the Planned Comparison in the pretest condition, with respective outcomes for the different comparisons $t(175)=.23, p=.82$ (two-tailed), $\eta^2=.003, t(175)=-.31, p=.75$ (two-tailed), $\eta^2=.003, t(175)=.34, p=.73$ (two-tailed), $\eta^2=.003,$ and $t(175)=.25, p=.80$ (two-tailed), $\eta^2=.003.$

- Given the sequential order in which the Treatment Groups could be observed, a Trend-analysis using polynomial contrasts was provided, restricted to a basic linear trend in the value of the dependent variable across the four Treatment categories. A significant linear trend could be observed, F_{LIN} $(1,165)=4.19$, $p<.05$, $\eta^2=.037$, as opposed to F_{LIN} $(1,175)=0.07$, $p=.79$, $\eta^2=.003$ on pretest, indicating that as the treatment condition and exposure to the Instruments increased, Motivation, as captured by factor score component DEDICAT, increased proportionally.

- Finally, in a third and final phase of the Comparative Analysis, a Two-way independent factorial ANOVA was performed, evaluating the interaction of pre- and posttest variables and the effects of these interactions on the observed factor score component DEDICAT, capturing Motivation. A non-significant effect for the model in general was obtained, with $F(3, 346)=1.95$, $p=.12$, $\eta^2=.017$, indicating that exposure to treatment per se, was not a sufficient condition for an increased Motivation to occur. In observing the effects of more frequent exposures, significant results emerged in the factorial ANOVA of Experimental Groups with at least a four-fold exposure, where a significant effect for the model in general was obtained, with $F(3, 129)=2.69$, $p<.05$, $\eta^2=.059$. Relevant to the analysis of pretest and posttest related effects between Treatment Group and non-Treatment Group, was a significant interaction effect observed between Experimental and Control Groups on pretest and posttest Time-of-Measure in the level of Motivation, $F(1, 129)=4.62$, $p<.05$, $\eta^2=.035$.

Again, no significant results were obtained in the various analyses for factor scores associated with component ACHIEV on pretest and posttest conditions.

In conclusion, with hypothesis *H1D* confirmed in Study 13, following the statements made in Chapter 8.4.3., it was found that evidence was provided for a causal relation assumed to exist between an application of Instruments and a successful Intervention within the Process of Motivation.

Following the Problem Statement defined in Chapter 2.5., then, the empirical research produced evidence for a causal relation to exist between isolated constructs operationalizing the Process of Motivation and concepts operationalizing the exemplary Instrumentation.

In addition, these findings provided secondary empirical evidence in support of the Model of Motivation, from which these exemplary Instruments were derived.

10.6. *Conclusions*

In conclusion, then, it appears insights have been obtained as called for in the Problem Statement, defined Chapter 2.5., into the Process of Motivation and into elementary processes involved in addressing Motivation through a Process of Interference.

The study appears to provide evidence:

- *that the Process of Motivation, as represented by a Model obtained in an inductive inference and supported by findings from literature, produced through empirical research the elementary constructs from the Model, capturing Motivation, which transformed the complex concept into a measurable entity;*
- *that based on the Model of Motivation, Determinants from the Process of Interference could be derived:*
  - *Four Conditions, supported by results obtained from empirical research, that enabled an adequate addressing of the Process of Motivation;*
  - *Attitudinal and Technical Competencies, specifically defined within two Modalities in Management of Motivation, an Extrinsic Modality and an Intrinsic Modality, supported by findings from empirical research;*
  - *And, within an Intrinsic Modality, an exemplary Instrument that produced a significant effect in Management of Motivation.*
  Research into these Determinants provided secondary empirical evidence in support of the Model of Motivation, from which these Determinants were derived.

It was concluded, then, in Chapter 9, reflecting on the Problem Statement, that the objectives of this dissertation have been reached.

10.7. *Implications*

With these results adding to the robustness of the explanatory theoretical Model of the Process of Motivation and its derived Process of Interference, a number of Implications ex post inferred from the theoretical Model are to be presented, in accordance to observations made in Chapter 1.5.

In a final and closing Chapter, that is to follow the main Summary of this dissertation, these Implications of the study for a Theatro Motivarum are to expand in further thoughts provided in an Epilogue.

In referring to the Prologue preceding the dissertation, both concluding Chapters, Implications and Epilogue, are considered to be this study's legacy.