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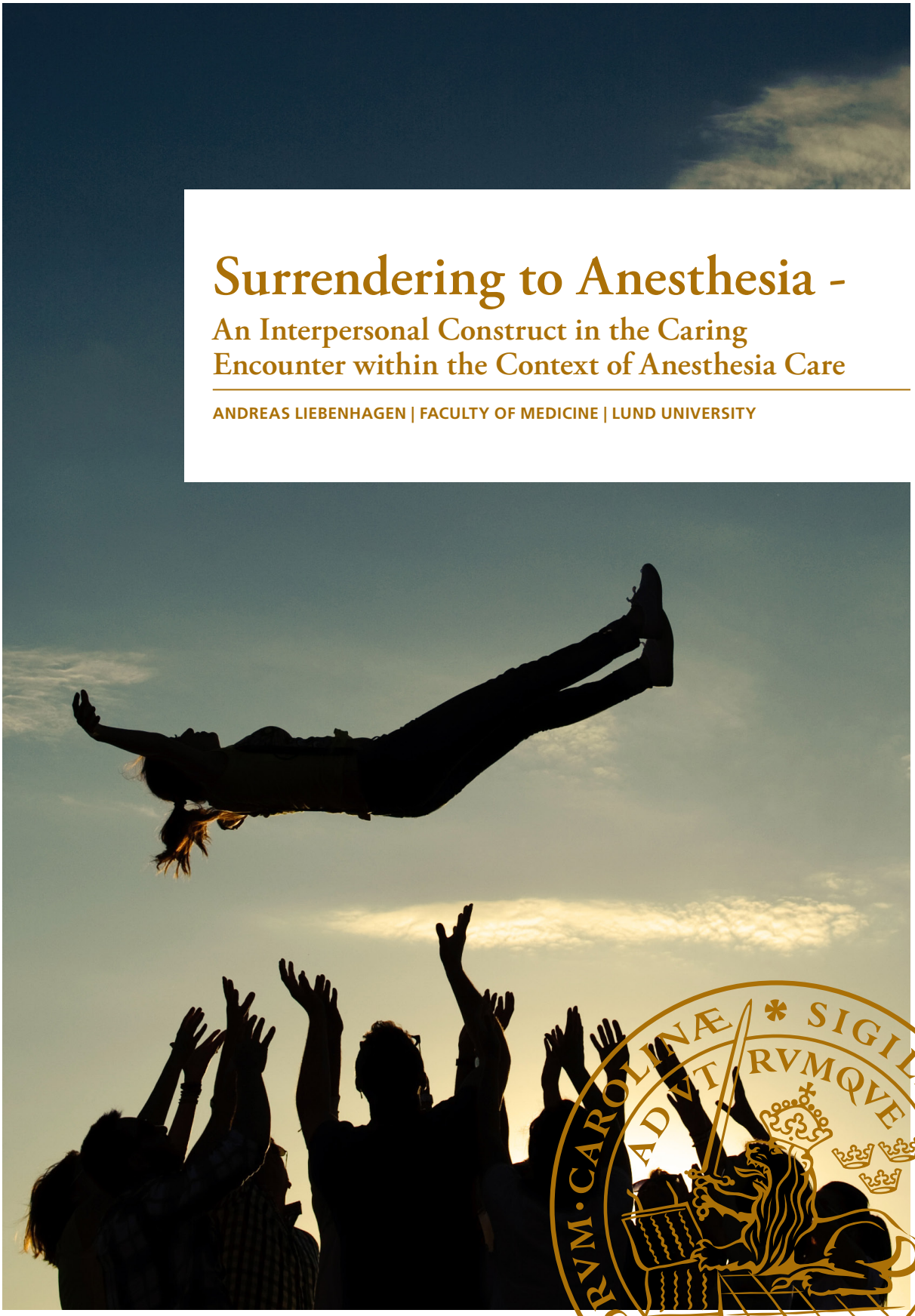

Surrendering to Anesthesia -

An Interpersonal Construct in the Caring Encounter within the Context of Anesthesia Care

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LUND
UNIVERSITY

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Abstract

This thesis departs from the challenges of high-technological care characterized by an intensive technological focus, which has a strong impact on an already exposed and vulnerable patient.

Aim: The main aim of this thesis was to: explore and describe the process of interpersonal dynamics in the caring encounter between the patient and the anesthesia provider in connection with anesthesia induction and to explore and measure the theoretical constructs in this context.

Methods: Both an inductive and deductive approach has been used and the research methods were both qualitative and quantitative. The study group consisted of: 1)17 patients who had undergone general anesthesia, 2) 202 patients who had undergone general anesthesia, 3)120 patients who had undergone general anesthesia and 4)185 nurse-anesthetists administering general anesthesia. Data were collected by interviews or questionnaires. The interviews were analyzed by the grounded theory method in order to develop a theoretical framework to support anesthesia care in a high-technological environment (Study I). Furthermore, this thesis consists of instrument development; the Anesthesia Surrendering Instrument (ASI) (Study II) and Recognition Ability in Anesthesia Care (RAAC) (Study IV), and classical test theory using principal component analysis (Studies II and IV). Additionally, corrected item-total-correlation was used (Study III) to further test whether the tentative ASI has the potential to be considered a robust patient-reported experience measure (PREM) in terms of validity and reliability.

Results: Surrendering to anesthesia is a grounded theory that presents a foundation for surrendering one's life into the hands of an unknown other. Alongside the anesthesia provider's (referred to as nurse-anesthetist in Study IV) recognition ability, the patient's surrendering experience is a concept and construct in the interaction between her/him and the anesthesia provider. The initial version of the Anesthesia Surrendering Instrument (ASI) was developed in conjunction with the development of the Recognition Ability in Anesthesia Care (RAAC) instrument. The later showed that professional self-image among 58% of the nurse anesthetists is affected by recognition from their employer, among 88% by recognition from their colleagues and among 89% by recognition from patients. In total, 89% of the nurse anesthetists let the patient participate during induction as a way of recognizing her/him as a person.

Conclusion: This thesis demonstrates that the patient's main concern evolves around the central issue of surrendering oneself as part of the basic social process of care that she/he undergoes in connection to anesthesia induction. The construct of surrendering to anesthesia is measurable and definable through the following four dimensions: preparation by avoidance, control, preparation by understanding, and acceptance. Recognition ability in anesthesia care is a measurable but complex construct, underpinned by the dimensions of creating a trusting relationship, working with the technology, and establishing trust.

Key words: Anesthesia, Surrendering, Construct, Care

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To my beloved family

Our posturings,

our imagined self-importance,

the delusion that we have some privileged position in the universe

are challenged by this point of pale light.

Our planet, a lonely speck in the great enveloping cosmic dark.

Carl Sagan

Content

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Abbreviations and Symbols

AP	Anesthesia Provider
ASI	Anesthesia Surrendering Instrument
ASA	American Society of Anesthesiologists
CITC	Corrected Item–Total Correlation
C-P-C	Circumspection-Preemption-Control
GA	General Anesthesia
GABA	Gamma-Amino-Butyric-Acid
I-CVI	Item-Content Validity Index
IQR	Inter Quartile Range
KMO	Kaiser-Meyer-Olkin test
NCC	Neural Correlates of Consciousness
NMDA	N-methyl-d-aspartate
PCA	Principal Component Analysis
PCT	Personal Construct Theory
PuL	Personuppgiftslagen
S-CVI	Scale-Content Validity Index
α	Cronbach's Alpha
λ	Eigenvalue

Definitions

Advocacy	An active process of support through promotion of and safeguarding the interests and well-being of another.[1]
Anesthesia	A pharmacologically induced state of temporary loss of sensation and/or consciousness (the latter; General Anesthesia).[2]
Anesthesia Care	Formal care provided by nurse anesthetists and/or anesthesiologists. (See; Anesthesia and Care)
Anesthesia Provider	Professional with legal authority to administer general or regional anesthesia (e.g., nurse anesthetist or anesthesiologist).[3]
Bartlett's Test of Sphericity	A test of the null hypothesis; that there is no correlation among the items in the data set and, if so, the correlation matrix is an identity matrix.[4]
Care	An interpersonal process (informal or formal) that is context specific and comprises a helpful response to a vulnerable other in need.[5]
	Informal; peronal care provided by e.g., a relative.
	Formal; professional care provided by e.g., a nurse anesthetist.
Category	Used in the development of grounded theory to incorporate common themes or patterns among several codes that represent what is happening in the data.[6]
Concept	An abstraction of the relationship (a theory about something) between elements in a theory.[6]
Construct	A more evolved concept that it has been explained by psychometrical measurement and thus becomes a labeled interpretation of a situation that forms the basis upon which its elements are understood.[7]

Component	The same as factor, the only difference being that the component is derived directly from the correlation matrix and explains the variance in the matrix.[4]
Constructive Alternativism	Multiple perspectives and interpretations of one and the same thing/situation.[7]
Corrected Item–Total Correlation	A reliability analysis that enables the assessment of an instrument's internal consistency through the correlation between each item and the total score of the remaining items in an instrument.[8]
C-P-C Cycle	A decision making process cycle involving: *Circumspection*; a phase in which potential decisions are balanced, *Pre-emption*; a phase in which the situation/thing is defined, *Control*; a phase of choosing a response that matches the situation/thing.[7]
Cronbach's Coefficient Alpha	A measurement of how well an instrument is actually measuring what it is supposed to measure (the internal consistency among items where α: ≥0.9=excellent, 0.8-0.7=acceptable, 0.6 >=poor, 0.5 >=unacceptable).[4]
Deductive	A reasoning or assumption departing from already existent findings.[6]
Dimension	See; factor.
Eigenvalue	A single value that represents the amount of variance among all items relating to a specific dimension (component/factor).[4]
Factor	A dimension that is a condensed hypothetical statement that reflects the relationships between a set of variables (items).[4]
Factor Loading	The weighted combination of variables which best explains the variance in the matrix.[4]
Grounded Theory	A research method that stems from sociology with the aim of creating a conceptual theory from generated categories that are grounded in the data.[6]
Inductive	A reasoning that departs from the exploration of different individual cases, from which patterns are extracted for the purpose of generating conceptual categories.[6]
Inter Quartile Range	A measure of variability and spread by dividing the data set into quartiles (q_1, q_2, q_3).[9]

Intra-	In or during, e.g. the time during surgery; *intra*operative.[10]
Kaiser-Meyer-Olkin test	An indicator of the strength of the relationship between items defined as a measure of sampling adequacy.[4]
Orthogonal	An assumption that all extracted items, associated with a defined component (factor) are not correlated with one another.[4]
Personal-Construct-Theory	The nature of a theory of personality and cognition developed by the American psychologist George Kelly in which he states that what is, or is not, the truth cannot be definitively stated. Instead, truth lies in the eyes of the beholder and, hence, people are free agents responsible for their own interpretations and actions.[7]
Peri-	The time prior to or after, e.g., *peri*anesthesia.[10]
Principal Component Analysis	A statistical method that aims to summarize the interrelationships among various items and that the variance accounted for by a specific item can be explained by the components (dimensions/factors) extracted from the data.[4]
Recognition	A process of duality taking place within the interaction between two (or more) persons, which generates a sense of being a unique person in the immediate presence of the other.[11]
Reliability	See Cronbach's Coefficient Alpha.
Surrendering	A psychological and spiritual renewal necessary to go forward in life, explained by a transitional process from one state of being to a new perceived being-in-the-world.[12]
Varimax Rotation	A procedure that maximizes the variance of the factor loadings by means of making high loadings higher and low loadings lower.[4]
Vulnerability	Being in a perceived situation of threat to one's autonomy and/or being at risk of harm, injury or disease as a consequence of individual or contextual aspects.[13]

List of Included Papers

From the conducted studies (I-IV) the following, numerically, corresponding papers (I-IV) was generated and constitute the basis for this thesis:

I Liebenhagen A., Forsberg A. The courage to Surrender - Placing One's Life in the Hands of the Other. *Journal of PeriAnesthesia Nursing*. 2013; 28(5):271-282. DOI: 10.1016/j.jopan.2012.12.003.

II Liebenhagen A., Forsberg A., Kristensson J. Development and Psychometric Exploration of the Anesthesia Surrendering Instrument (ASI). *Journal of PeriAnesthesia Nursing*. 2018. DOI: 10.1016/j.jopan.2017.12.008. [Epub ahead of print]

III Liebenhagen A., Arnesen-Strömberg M., Darwiche S., Forsberg A., Kristensson J. Surrendering to Anesthesia - Further Validation of the Anesthesia Surrendering Instrument (ASI). Submitted to journal.

IV Liebenhagen A., Forsberg A., Kristensson J. Exploring the Dimensionality of the Recognition Ability in Anesthesia Care. Submitted to journal.

Preface

With the help of biomedical sciences, humanity has managed to map out and define the anatomy, physiology, and chemical processes of the body to a great extent. However, there is still no clear understanding of how to best explain unfamiliar, non-bodily experiences in specific circumstances, such as the anesthesia induction context. We can perceive, interpret and act upon changes in our environment within a split second while at the same time being autonomous beings of awareness. Everyone has her/his own unique personality with various degrees of difference in terms of perception and response.

I have spent over two decades in my profession as a registered nurse and nurse anesthetist, caring for and watching over the unconscious and vulnerable patient. However, despite being an expert in anesthesia care, I know that to the patient I appear as an unknown *Other*. For the patient, the *Other* (me in the role of nurse anesthetist and anesthesia provider) becomes a concrete manifestation of the unknown. That is, a face that will close, sustain, and then resurrect the consciousness when the diagnostic procedure or surgery is finished. Thus, as an anesthesia provider I embody the culture of the health care organization, comprising specific knowledge, norms, and opinions that the patient might interpret as threatening her/his right to autonomy, integrity, and self-preservation.

I started my clinical career working at various intensive care units in Scandinavia, the United Kingdom, and Australia and caring for children and adults in need of general, thoracic and/or neuro intensive care. Over time my clinical skills increased, while my curiosity about caring for the sedated and unconscious patient led to studies in anesthesia nursing (2000 to 2001) at Umeå University. Thanks to the experience and enthusiasm of the nurse anesthetists and anesthesiologists teaching at the university, the discipline of anesthesia is something I have nurtured and made my own. They made me aware of the exclusivity of the anesthesia dicipline and that a high degree of autonomy goes hand in hand with personal responsibility for professional knowledge, communicational skills, and moral conduct. After all, on the verge of having our sense of lucidity reduced, we all expect and hope to be cared for by skilled professionals who treat our bodies and integrity with the greatest respect.

So, I began to wonder what it is like to be anesthetized and how one can describe having another human being's life in your hands? During the course of my doctoral studies I

slowly came to understand that this curiosity stems from a far more complex and somewhat philosophical source, i.e., what are we apart from our physical bodies in a high technological environment? Anesthesia implies manipulating human consciousness and awareness with the help of artificial substances with the intention of creating as much relief and comfort as possible for the patient. This often results in an unconscious patient whose existence depends on professional expertise and moral conduct.

The thesis is a scientific study of how the thoughts, feelings, and behaviors of both patients and professionals are influenced by the actual or implied presence of each other, i.e., the caring encounter between the patient and the anesthesia provider. Consequently, the research questions are from the patient or nurse anesthetist perspective and inevitably intersect with social psychology. Studying personal processes within an interpersonal set of circumstances involves an unavoidable combination of caring sciences and social psychology, i.e., interdisciplinary science.

Becoming familiar with the nature of our persona requires studying how we perceive different situations and how we deal with them within a caring context. What better option, then, to study ourselves at our most vulnerable – when we are about to surrender into the unknown and when we have another human being's life in our hands.

Introduction

Annually, about 2.8 million people, comprising all ages and genders, undergo some type of surgical intervention in Sweden, including inpatient and day-care surgery.[14] Globally, a total of 17% of surgical patients experience complications, leading to a fivefold increase in the mortality risk.[15] Swedish data from October 2016 shows that mortality after major surgery (e.g., head, neck and, gastrointestinal surgery) increases nearly fivefold from 30 days (1.8%) to a year afterwards (8.5%), highlighting the seriousness of major surgery and related complications.[16] For instance, intraoperative hypotension has been reported to affect several organs where low systemic blood pressure during general anesthesia (GA) leads to a fourfold increase in the risk of myocardial injury.[17] A nested case-control-study revealed that intraoperative hypotension was associated with postoperative stroke.[18] Data from the Cleveland Clinic pertaining to non-cardiac surgery showed that a mean arterial pressure below 55 mm Hg was associated with acute kidney and/or myocardial injury.[19] A larger meta-analysis (N=82514) of the risk of acute kidney injury (AKI) showed a pooled incidence of AKI of 14.4% and a relative mortality risk due to postoperative AKI of 12.6%.[20] Therefore, surrendering to GA and surgery is not without risk because perioperative complications have been found to decrease the survival rate by 69 %, irrespective of identified preoperative risks.[21]

General anesthesia and surgery are invasive procedures that can be perceived by the patient as life threatening. The patient does not always know whether the surgical procedure, for which they have to undergo GA, will result in an improvement or cure. This uncertainty of not knowing the outcome can be added to the uncertainty of not knowing what the GA entails. It is not unusual for patients to express their thoughts and worries associated with anesthesia, asking if it is really certain that they will not wake up during surgery or being concerned about not waking up again. The already exposed and vulnerable patient faces not only uncertainty about the surgical outcome but also about being anesthetized. Feelings of threat and uncertainty can generate fear, which is a primary emotion that might cause an unwillingness to surrender and prevent trust in the anesthesia provider (AP).[22] My pre-understanding is that the interaction between the AP and the patient is of importance for making the power balance in the encounter more even and creating trust and safety in the surrendering. Hence, a deeper understanding of the patient's surrendering experience in anesthesia care is therefore necessary and the focus of this thesis.

Background

Anesthesia can be regarded as an orientational metaphor, as being 'under anesthesia' is comparable to being under the surface of, or deep beneath, a state of lucidity.[23] Anesthesia can also be an ontological metaphor as it requires a substance or entity that effects one's consciousness.[23] The primary role of the AP is to reduce the patient's conscious experience by generating a state of unconsciousness through sufficiently deep GA, i.e., a pharmacologically induced coma.[23, 24]

The anesthesia discipline is interdisciplinary, as it involves biomedicine and nursing.[23] Hence, caring for the patient with commitment and responsibility is the common denominator between the disciplines in anesthesia practice.[25] That is why scientific research plays an integral part in the attempt to understand what elements and concepts shape the caring encounter between the patient and the AP. Consequently, to facilitate an understanding of how the interpersonal dynamic in anesthesia care is constructed, the processes and dimensions that characterize the caring encounter in connection with anesthesia induction are here explored and outlined.

Two questions that formed a point of departure, from which each of the four individual aims of the study were generated and refined, sought to explore and highlight:

- What aspects are represented in the patient's surrendering experience prior to anesthesia induced unconsciousness?
- What aspects are represented in the process of recognizing the patient prior to administering GA?

Interpersonal dynamics in anesthesia care originates in the short caring encounter between the patient and the AP. Research focusing on the interpersonal dynamics in connection with anesthesia induction is limited, both from a patient and AP perspective. The patient is the care recipient who needs to deal with her/his thoughts and emotions on the brink of anesthesia induced unconsciousness. The AP is the care giver who must adhere to professional knowledge, ethical principles, and the demands and regulations of the healthcare organization. Therefore, it is necessary to explore and come to a wider understanding about how the patient and the AP comprehend and cope within this brief encounter bearing the above aspects in mind. However, the AP is a person whose inner processes follow their own unique path, herein expressed through the dimensions of recognition.

Therefore, the process of interaction in the caring encounter involves both patient and AP. Subsequently, the care provider should take account of the patient's experience rather than merely trying to interpret her/his own behavior.[7]

Contiguous research has explored and proposed an explanation to patient advocacy in anesthesia care, comprising the provision of dignified and safe care with a moral commitment.[26] Furthermore, studies on communication in the intraoperative context have revealed how the patient should best be addressed in order to create a respectful environment for her/him. More specifically, a patient receiving anesthesia care should be spoken to with positive words and in a calm manner in order to ensure safe progress into anesthesia and maintain her/his privacy and dignity.[27] By co-ordinating the operating team's care for the patient during the induction process, enabling the patient some sense of control in the vulnerable situation.[27, 28]

Anesthesia induction requires a high technological environment in order to follow and respond to any changes in the patient's physiological response to the anesthesia. In a recent study among critical care nurses it was shown that while technology can be considered a major tool in caring for the patient's physical wellbeing, it might also become a barrier to patient care. Using advanced medical equipment in anesthesia care might generate stress in the care giver (nurse or physiologist) who, as a result, runs the risk of focusing more on the technology than the patient.[29] Consequently, the implementation of advanced care prior to anesthesia induction requires multitasking skills; being attentive to patient safety and guiding the patient through the induction.[28]

The Function and Properties of General Anesthesia

General anesthesia is the medical method available to desensitize the whole body, leading to an over-all but reversible unresponsiveness, including a rescinded consciousness.[30] Anesthetic agents used to initiate GA are usually administered intravenously.[30] This initial phase is called anesthesia induction, where the consciousness of the patient alters from a conscious to an unconscious, i.e. comatose, state when full anesthesia has been reached.[30] In order to maintain unconsciousness during surgery, the hypnotic agent (e.g., Propofol) can continue to be administered intravenously through an infusion-pump or as a volatile agent (e.g., Sevoflurane) via the anesthesia apparatus ventilator.[30]

General anesthesia comprises a triad of unconsciousness, nociceptive blockade and immobility with the primary aim of suppressing lived experience.[24] Accordingly, being anesthetized involves one's consciousness pharmacologically manipulated, a procedure that allows millions of people around the world to undergo surgical interventions or diagnostic procedures.[23, 31]

Despite the progress in biomedical science, the neurophysiological mechanisms of GA remain unclear.[31] However, certain mechanisms on the molecular level and the global brain propagation have been identified.[31]

The Transition to Unconsciousness

In order to grasp the patient's struggle to surrender it is important to understand the transition to unconsciousness. Being conscious and perceiving the world require a minimum of cerebral activity necessary to maintain a brain state that corresponds to a specific state of consciousness (e.g., being awake). This minimum requirement of cerebral activity is defined as the neural correlates of consciousness (NCC).[32, 33] Factors and areas in the NCC responsible for the up-bringing of the conscious experience are diverse and hypothetical but thus far include:

- A neuronal oscillation of 40 Hz among neurons in the cortex-thalamus system (i.e., where the thalamus functions as a relay-station for sensory signals to the cortex for interpretation)
- A re-entry loop activity of action potentials within the cortex-thalamus system (e.g., to remain awake and perceive)
- Activity between neurons in the visual and occipital area projecting to the prefrontal cortex in order to perceive the world
- Activity among neural cell assemblies in the hippocampus that are constrained by N-methyl-d-aspartate (NMDA) receptors. The activation of NMDA receptors is suggested to be of significance for memory storage.[32-34]

The different types of NCC, e.g., visual or auditory, throughout the brain must be combined in order to create a perceptual experience.[32] The perceptual experiences are then molded into a single experience that is seamless in its quality.[32] A frequency of 40Hz (an oscillation period of 12-15ms) among the neurons in the cortex-thalamus system is necessary to bind perceptual information and integrate it into the various parts of the brain. Loss of perceptual information and integration due to anesthesia therefore reduces neuron oscillations (= reduced Hz) and consequently conscious experience.[32-34]

General Anesthesia vs. Natural Sleep

Being anesthetized is not like going asleep. Natural sleep has a similarity with the unconscious, or comatose, state of GA with the presence of non-rapid-eye-movement on electro-encephalo-gram. Although similarities exist between pharmacologically induced '*sleep*' and natural sleep, the perception of time is affected differently by the two states. While natural sleep makes it possible to sense and appreciate the lapse of time, GA does not.[35] On recovery from GA the anesthesia is experienced as timeless, despite the fact that several hours may have passed since the patient was anesthetized.[35]

One explanation is that anesthesia can be described as a linear process as it first shows analgesic effects and progresses to a gradual loss of reflexes until unconsciousness occurs. At the same time, it is a dynamic process because it represents a balance between the inhibitory effect of anesthetic drugs and the exhibitory effect of the surgery (i.e., pain-inducing), with both effects being exhibited in the cortex.[30, 36]

Unconsciousness and Nociceptive Blockade

Analgesia from GA is a sensory blockade that is necessary to prevent arousal in the central nervous system and hence inhibits cardiovascular and neurohumoral responses.[24] It also follows the principle of how pharmacological induced unconsciousness leads to reduced cortical activity, inhibiting the integration of information within the corticothalamic network.[32-34] The physiological principle of GA can be described as a cascade initiated by an adversely affected medulla resulting in:

a) An increasingly unstable contact with cortex-thalamus
b) An increased neural negativity in and between the frontal cortex (covering motor skills, episodic- and semantic memory), and the limbic system (covering flee and fight behaviors)
c) A reduced ability to store information (memory)
d) Hyperpolarization of GABA- (Gamma-Amino-Butyric-Acid) sensitive neurons in the thalamus, rendering the neurons less excitable and thus sensorially blocked
e) Disruption in the communication existing between the parietal (covering somatosensory information from the skin and body) and frontal cortex, which ultimately results in cognitive loss and unconsciousness.[32, 37]

Typical clinical signs of GA include the absence of eyelash reflex, small and centered pupils, and suppressed respiration, all of which are dependent on how deep the anesthesia is.[30]

Unconsciousness and Immobility

When surrendering to anesthesia one accepts to be physically immobilized in a way that cannot be affected by oneself. GA induced immobility is partly associated with the administration of volatile anesthesia agents such as Isoflurane® and Sevoflurane®, or intravenous agents such as Pentobarbital® and Propofol®. The common denominator is their inhibitory effect on orexinergic neurons in the hypothalamus that causes a cataplectic like state of muscle weakness in the body, which is an requirement for surgery.[24] The orexinergic area in the hypothalamus is of significance for sleep regulation.[38]

A volatile agent, e.g., Sevoflurane®, and/or an intravenous agent, e.g., Propofol®, hyperpolarize the neuron cell membranes in the sense that its resting potential of -70mV becomes increasingly negative due to escaping intracellular potassium ions.[37, 39] As stated previously, when describing unconsciousness and nociceptive blockade, this follows from the inhibition of GABA sensitive receptors in the cortex-thalamus system. Consequently, in cases of deep anesthesia, increasingly stronger excitatory postsynaptic potentials are required to trigger neuronal activity.[37, 40]

Consciousness is not an all or nothing principle but appears to be graded.[35, 39] This becomes evident with low doses of analgesics and/or hypnotics for the purpose of sedation. The clinical signs of sedation include retrograde amnesia, analgesia, altered time perception, personality change, and ultimately at the border between sedation and unconsciousness, somnolence.[30] At higher doses the patient will not respond to requests and only react to painful stimulation.[41] When it comes to motor skills and immobility there is an analogy to natural sleep. When dreaming we have diffuse and partly conscious experiences, but remain unable to initiate any motor activity in the extremities. This is due to the inhibitory effect on the medulla, also called sleep paralysis.[37] When asking patients undergoing GA about their concerns, one common answer was the fear of waking up paralysed and being unable to call for attention.

Anesthesia Care Practice in Sweden

Anesthesia practice in Sweden is based on collaborative care for the patient between two APs; the anesthesiologist and the nurse anesthetist. In Sweden, the nurse anesthetist is a registered nurse with a graduate diploma in specialist nursing – anesthesia care.[42] Because the anesthesiologist has the main medical responsibility she/he evaluates the patient's physical status prior to the anesthesia in accordance with the American Society of Anesthesiologists (ASA) classification system.[42]

Taking account of the patient's physiological status, the nurse anesthetist induces, maintains and completes GA independently or with more or less support from the anesthesiologist. Autonomy in anesthesia nursing means that the nurse anesthetist is expected to:

- Plan and independently administer GA to ASA I-II patients in elective surgery
- Plan and administer GA to ASA III-V patients in elective surgery in collaboration with the anesthesiologist
- Plan and administer GA to ASA I-V patients in acute surgery in collaboration with the anesthesiologist.[42]

Some specific features of anesthesia nursing in Sweden are:

- Establishing and maintaining the patient's airway
- Administering volatile agents, intravenous hypnotics, analgesics, and muscle relaxants
- Monitoring, regulating, documenting, and following up the patient's respiration, circulation, depth of anesthesia, and body temperature
- Documenting and following up the patient's blood and fluid therapy requirements
- Working preventively by consulting the anesthesiologist, setting priorities, taking quick decisions and actions in the case of acute adverse events
- Reporting, documenting, and critically evaluating the peri-operative care.[42]

Ontological Assumptions

This research project is based on the perspective of constructive alternativism, namely; there are infinite possibilities for how events such as being anesthetized or providing anesthesia can be interpreted and conceptualized.[43] In line with Kelly[7, 44], being a person is initially a matter of '*I can*' rather than Descartes' '*I think*'. Thus, a person can experience and interpret the same event differently from others and is intrinsically responsible for her/his own choices and actions.[7]

The philosophical orientation of constructive alternativism is that humans act in a way that allows her/him to generate hypothesis and test them against her/his perception of the environment. At the same time, revising previous hypotheses if they prove to be of limited use or a poor fit.[45] Because choice and action are unavoidable, according to Kelly[7], a person must also develop a network of meanings; a construction system which helps to make sense of the experiences throughout life, e.g., becoming a patient and going undergoing anesthesia and surgery. This infers learning from previous events and better anticipating comparable events with the possibility to choose to act differently in the future.[7] Hence, through constructive alternativism; "*every man is, in his own particular way, a scientist*".[7]

The self, according to Kelly[7], is a product of experiences that is characterized by layers of interpretations (constructs) from previous life events. The true self is thereby a core-construct surrounded and protected by various constructs serving as perspectives from which a person anticipates events.[44] A patient may recall a previous operation or encounter and so anticipate and prepare her/himself for a similar event, e.g., post-operative nausea or pain. This core-construct is what directs and controls a person's self-identity and existence, while the protective layers of constructs merely serve as embellishment.[7, 46] Consequently, the protective layers represent the person in the perioperative environment and are not her/his true identity.

Instead, they function as a manipulated representation of a person's true character.[44] Fundamental for the preservation of one's self-identity is the ability to create oneself irrespective of the contextual circumstances. This implies that for the patient to preserve her/his dignity she/he must relate to the circumstances associated with the anesthesia experience. Intrinsically, the self is a creation generated by the person in collaboration with her/his social world from which it is inseparable.[7, 44] Contextually, the AP needs to understand that the patient due for anesthesia is inseparable from the social world of which the AP is also a part.

The Patient in the Context of Anesthesia Care

The patient is a person whose existence is grounded in the notion that her/his life is finite and that her/his freedom is restricted to social and bodily prerequisites.[7] Specifically, when the patient is faced with a disease that requires surgical intervention and anesthesia she/he is reminded about life's perishability and that one is mortal. Therefore, while going through the anesthesia experience the patient can be viewed as a participant-observer and life-history taker.[44] Applying the reasoning of Kelly[7] in the anesthesia context, the patient becomes limited to her/his physical body while at the same time being inseparable from and dependent on the AP. As a result, one is reminded about life's fragility and that one is mortal. Hence, it is necessary for the patient to understand, anticipate, and control the anesthesia experience while at the same time trying to construct an appropriate stance to being anesthetized.[7] At the same time, the patient's dependence on the AP further defines her/his role as one of a trustor, expecting genuine good will on the part of the professional (here: AP).

The Anesthesia Provider in the Context of Anesthesia Care

In line with Koehn[47], the AP is an expert grounded in professional ethics who possesses authority because society seeks out her/his specific knowledge and skills for anesthesia care in connection with a surgical intervention or diagnostic procedure. The AP is regulated by the objective of furthering of the patient's good, an obligation and a requirement necessary for the AP to build and preserve the patient's trust.[47] Thus, due to being a professional, the AP becomes an object of trust.[47, 48] This trust, according to Koehn[49], could be viewed as a respect-based trust, here reinforced in the caring encounter with the patient where the AP engages in dialogue. In respect-based trust there is no desire for exploitation but rather confidence in the other's judgement.[49] This means that the patient trusts the AP so much so that she/he willingly allows the AP to make decisions on her/his behalf while under the care of the AP.

In the light of being a professional within the context and discipline of anesthesia, the AP must relate to seven conditions of trustworthiness in agreement with Koehn.[50] The AP must;[50, 51]

- Aim at the patient's good
- Be willing to act on the patient's behalf
- Ensure that the willingness to act is sustained by for as long as it takes.
- Conform to a professional standard of practice; i.e., must be competent to be trustworthy
- Be able to demand from the patient the degree of accountability and discipline necessary for help to be rendered
- Have freedom to serve and exercise judgment to develop and initiate appropriate strategies for promoting the patient's good
- Respect the vulnerability of the patient by monitoring her/his own behavior and responsibility towards the patient.[50, 51]

While the AP can be either a nurse anesthetist or anesthesiologist, the role requires a person who can maintain a balance between managing advanced technology, and staying engaged in the dynamics of patient interaction.[52] On the one hand, as a person the AP has also devised a system of dimensions to better come to grips with what takes place in specific situations,[44] here during the different phases (e.g. preparation, induction, maintenance, and emergence) of anesthesia care.

Epistemological Assumptions

The epistemological assumptions in this thesis stem from constructive alternativism that holds that reality is independent of the observer.[43] This means that it is not possible for the observer to know the true nature of reality except from her/his own construction (interpretation) of it.[44] Consequently, knowledge is a collection of constructions that the person has generated through experiences.[43] The epistemological stance can be explained through the person's involvement in actions and meaning making. Making meaning of reality involves a sequence of construction (e.g., construction of knowledge) containing the three steps of circumspection, preemption and control, also known as the C-P-C cycle.[7] The cycle of construction is involved in a person's interpretation as well as in decision and meaning making of reality.[44] The initial phase of the C-P-C cycle, **circumspection**, can be described as identifying and balancing different scenarios to explain a specific question or experience.[7] The person makes a rough estimate of why reality appears as it does or how different actions might affect a specific scenario.

In relation to the present context, the patient makes a rough estimate of why she/he needs surgery and anesthesia and how she/he can best relate to the requirement and necessity of surrendering into the AP's care.

In terms of research, the scientist starts off with several hypotheses pertaining to an area of scientific interest.[44] This continues to the **pre-emption** phase, which involves eliminating various sets of alternatives with the aim of choosing the construct that has the greatest relevance for meaning making.[7] Thus, one might argue that pre-emption serves as the initial step for developing a sense of control over how reality is best interpreted and explained.

Control is also a form of **choice** where the person incorporates her/his construct of an event or explanation into her/his system of personal constructs[7], e.g., being in a conscious state as opposed to entering into an unconscious state. Layer upon layer, each construct of reality constitutes how a person chooses to relate to the world.[44] That said, previous constructions within the system of personal constructs are always challenged by new ones as a person learns from previous mistakes or has to reevaluate earlier conceptions of reality and knowledge.[44]

Accordingly, a constructivist approach to defining knowledge denotes that it is something humans create instead of ascertain.[53] More specifically, a scientist develops constructs for certain purposes in relation to particular contexts.[53] In this regard, the development of the construct of surrendering and recognition in this thesis is in order to expand the understanding of the anesthesia context. Bearing that in mind and with an introspective point of view, how a person construes a phenomenon in different settings explains how a constructivist epistemology serves as a foundation upon which the patient or AP views her-/himself as a person. This in turn explains how she/he chooses to think, feel, and act in specific situations[7, 44] e.g., the anesthesia context, because cognition outlines the basis of a person's personal construct system.[7, 44, 53]

Perspectives on Care and Caring

To care about (someone) means recognizing the lived experience of the other (e.g., the patient) who is vulnerable, marginalized or in need.[5] Caring for (another) involves responding in a helpful way to facilitate a positive change, thus making caring an a context specific interpersonal process.[54] The context might therefore require professional expertise (e.g. nurse anesthetist) and interpersonal sensitivity (insight into another's suffering) where the antithesis is mechanical, focused, and rushed practice.[54] Therefore, providing genuine care within the anesthesia context is dependent on the formation of a AP-patient relationship representing formal care that goes beyond that provided to the patient by relatives or friends (i.e., informal care). The significance of

care therefore represents a relational dynamic, between the AP and the patient, and a transformative ethic where the AP responds in a helpful way in order to facilitate a positive change for the patient.[5] In the context of anesthesia, this can be illustrated by the AP administering GA in connection with a diagnostic procedure or surgical intervention that would otherwise cause the patient unbearable discomfort or pain.

According to Conradson[5], care comprises three dimensions that represent an awareness of a specific situation (e.g., someone is in need) and/or the need of the other (e.g., alleviation of discomfort). More specifically, care is:

- Caring about, i.e., becoming aware of the need of the other
- Care giving, i.e., the hands-on practice of providing care to the other
- Care receiving, i.e., the patient who receives the care.[5]

Finfgeld-Connett[54] states that the antecedent to the caring process involves three specific preconditions with the regard to the care provider. First, *professional maturity* that entails decision making alongside execution of skills related to one's professional competence.[54] As such, the AP must be able to cope with mental and physical challenges that co-occur with the caring process. This necessitates a healthy emotional balance in order for the AP to protect her-/himself together with an ability (spiritual and/or philosophical) to manage personal vulnerabilities and self-confidence. Second, a moral foundation that incorporates a benevolent commitment towards the patient where anesthesia care is provided in a reliable and responsible manner. Third, a conducive environment where anesthesia care is made possible by the/a health caresystem that values the enactment of caring more than just simple task completion.[54] This implies that the AP is given adequate resources and the time to provide the patient with optimal anesthesia care along with recognition of her/his accomplishments.[54]

Epitome

If my ontology and epistemology are viewed as a whole it could lead to the impression that my point of departure and subsequent research findings are not related to the field of nursing science with its plethora of nursing theories. However, I have linked the results from the more pragmatic constructivist alternativism to specific aspects of personal constructivist theory, as described in Study I. Research on subjective perspectives and the interrelation between the various forms of perspective are dependent on the contextual setting in which the subject's experiences unfold. An aim that is analogous with that of the caring sciences and their research foundation by reflecting patient and professional perspectives for the purpose of supporting, enabling, and anticipating needs or conditions in specific contexts[55] e.g., anesthesia care.

In the interpretation of my ontological and epistemological perspective I see a relationship between personal constructivism and social constructionism. According to Kelly's[7] personal constructivism, sociality represents a way in which humans can form relationships by mutual construction of one another's self-identity. Because not only do we judge and act on others' behavior, but our decisions and responses to actions are also based on how we make sense of the intentions of others. Therefore, the nursing profession is conducted within the framework of care. An argument that is supported by Jenner[56] is that nursing actions are intentional, based on the specific expertise and skills belonging to the nursing discipline. At the same time, being a subjective and meaning making process that requires sensitivity and imagination.[56] These are significant aspects for enabling the nurse to promote active participation and interpret the needs of the patient.[56]

According to Raskin,[43] this ontology makes constructivism pragmatic in its view on how context and relational aspects combine to determine how humans interpret and view their world. Furthermore, the epistemological perspective holds that knowledge is an aspect of human consciousness, which allows for subjective interpretation of why knowledge is transient. This is because knowledge is generated through the individual's perceived reality, interaction with others, and negotiations. In turn, these aspects are dependent on the given context, e.g., the anesthesia context, and its temporality, e.g., time constraints.[7, 43]

Framework

The framework of this thesis is based on Kelly's[7] Personal Construct Theory (PCT) in which experiences throughout life are labeled and categorized depending on what meaning they have for the person[53], e.g., nursing is subjective, intentional, and meaning making.[56] By construing specific events into constructs of meaning, each construct serves as a mini-theory of how to anticipate similar events in the future.[44] Consequently, PCT is a metatheory developed from and anchored in an ontology of constructive alternativism.[45, 57] PCT can be described as focusing on specifying the process of living and describing ways in which persons try to anticipate events.[45] Because the PCT framework was developed for and is mostly used within the disciplines of psychology and sociology, it also has the attributes of a shared theory between scientific disciplines.[55] And so, making it possible to share it with the discipline of nursing. The theoretical framework of personal constructs comprises the attributes of:

- Pragmatism – in that the theory does not make any claims on what truth is or is not, rather that it is something personally constructed by the patient and the AP

- Phenomenology – in that it is the effort to understand and accept the patient's perspective that enables the AP to help and meet the patient's needs, i.e., being able to surrender
- Humanism – in that it states that each individual is responsible for her/his own choices in life and that everyone of us develops our own perspective on how we choose to act and interact in the world. For instance, the AP chooses her/his own perspective on morals and how to act in the world of perianesthesia care.[44]

By the use of inductive and deductive methodology I have been able to narrow and specify each phenomenon as a concept and construct with a structure for interpretation. However, in line with the assumption of Karnaze[53] on the functionality of theory, the constructs of surrendering and recognition within this thesis are more in the nature of '*tools to be used for research*' rather than '*reasons to do research*'. In addition, by addressing, exploring, and describing surrendering and recognition in anesthesia care, my intention is to make more sense these constructs associated with anesthesia induction. Hopefully these constructs will be used as theoretical tools to better understand the induction experience from a patient and an AP perspective.

Key Concepts

One construct in the encounter between the patient and the AP at anesthesia induction was identified; surrendering (Studies I, II and III). In addition, a grounded theory about recognition in anesthesia care[58] was explored to identify its components (Study IV).

The function and philosophy behind the constructs of surrendering and recognition represent multiple facts. Each construct summarizes and enables comprehension of various facts related to the specific grounded theory in question. Once a theory has been formulated a "*good scientist*" should immediately start testing it, e.g., further scrutiny and evaluation.[7]

Both constructs should be seen as transient or fleeting, because new research findings might entail the need to change the theories associated with them.[7] Each construct can therefore be expanded in the light of future findings, human development, and perspectives. Hence, conceptual theories can never be more than transient because they will inevitably be succeeded by an updated or new theory.[7] The constructs related to this research should therefore be seen as tentative descriptions of how the participants in Studies I-IV interpret consistent patterns in the phenomena.

Surrendering

In the light of Kelly's[7] humanistic and pragmatic personal construct theory, the self is constructed by various life experiences in a cyclic process of creation.[44, 53] Here, creation begins when a human has to decide about what action to take in relation to her/his experiences. The initial phase in the cyclic process of creation is one of circumspection; carefully balancing the different available alternatives.[7] The next phase; pre-emption, is about excluding various alternatives, ending up with the alternative that has the greatest relevance for one's self-definition.[7] The final phase; control, is analogous with the decision to explore in order to develop and maintain the best view of the course of events.[7] However, when further exploring surrendering I found that the theory of personal construct alone cannot fully explain or define surrendering. Therefore, placing surrendering in the context of anesthesia meant adding the perspective of Wolff,[12] who states that there is an ontological element to the experience and construct of surrender, which also encompasses a refined and barely noticeable state of being, concerning what is already known and the unpredictable unknown.

Defining the Properties of Surrendering

From the material and individualistic standpoint associated with western culture, surrender is interpreted as a form of defeat or submission where one individual dominates another.[12] In line with Wolff[12], I will here take a more transformative view of the construct, involving a transition from one state of being to "a new being-in-the-world", which originates from a Heideggerian perspective, claiming that the world is always a shared world that requires the presence of another in order to provide care by being there for the patient.[13] In turn, when the patient is in a process of constructing a foundation to surrender into the hands of the AP[59], she/he is dependent on her/his awareness, receptivity, and responsiveness whilst confronting the unfamiliar – in this case being unable to comprehend the consequences of anesthesia induced unconsciousness. This dependence is also crucial in the sense of ensuring the process of surrendering, where full acceptance of the unpredictable marks the entrance into the specific experience of surrender. Once the patient has entered into this state she/he is ready to meet the unknown in whatever form it occurs.

Characteristic Properties of Surrendering

Wolff[12] distinguishes five different implications of surrender:

- As identification, which is the actual aim of surrender, where the patient identifies her/himself with the situation. This involves an acceptance of bodily and mental alteration where the patient identifies with bodily and mental unconsciousness

- As a total involvement in oneself and the situation, meaning to be fully aware of one's physical and mental state, or of an object or subject
- The relevance of everything; for the individual who has surrendered that which falls outside her/his awareness is irrelevant. For the patient undergoing anesthesia induction, it concerns her/his state of being, the anesthesia induction, and the altered state of consciousness
- Exposure to the risk of being hurt where a false perception or idea has too strong a hold over the patient, resulting in an inability to let go; a false surrender
- When in a state of surrender there is a suspension of received notions. This involves anything that has to do with the patient's interests. Say, learning processes and the ability to explore that which is in her/his best interest, are suspended. Whatever it may imply, it becomes irrelevant once she/he is in a new being-in-the-world.

Surrendering and Recognition in Anesthesia Care: How are They Related?

Exploring the dimensions of recognition was a step in trying to understand the AP's ability to recognize the patient's surrendering process in connection with anesthesia induction. The aspect of recognition ability already became apparent in Study I, where the patient's surrendering process was identified. For example, the importance of the AP recognizing the patient was demonstrated by means of dialogue and eye contact between them.

Moreover, in Study II the item-response frequency showed that it was of importance for up to 80% of the participants (patients) to be personally received and recognized by the AP. The dialogue with the AP was also of importance as questions about the anesthesia were posed by the patients. Thus, their concerns were recognized by the AP. In addition, the establishement of eye contact with the AP was confirmed by over 60% of the patients who participated in Study II.

Recognition

Human identity is built and maintained through intersubjectivity. This is a process in which the person's life-encounters form the basis for mutual recognition, encompassing feelings of self-worth, self-respect, and self-esteem.[11] Because the AP initiates and maintains the caring encounter until the patient is anesthetized, and because of the concepts mutuality, I saw the relevance of constructionism and Goffman's[60] sociological theory on the interaction ritual, i.e., seeing humans as their own creators, who through previous life experiences continuously construct and interpret reality in relation to the environment and society. This stance describes every human as unique, capable of defining her/his situation and behavior in terms of the self and one's thoughts. It also involves the ability to interpret and understand alternative

perspectives.[60] In a previous study by Liebenhagen & Forsberg[58], I argue that it is during face-to-face interaction that the AP and the patient create a foundation for mutual recognition, through verbal and bodily expressions, as well as by being more or less aware of one's own interpretations of and reactions to the phenomenon experienced during the encounter.

Defining the Properties of Recognition

Recognition is a concept and construct with two facets. On the one hand the AP sees her/himself as a reflection of the other (patient or colleague) where the other becomes an independent entity.[11] On the other hand the AP perceives her/himself as a unique subject in the immediate presence of the other.[11] Thus, recognition is in itself a mutual process that always ends in a state of inequality as it is an on-going process of construction in which social life emerges.[60]

Defining the Characteristics of Recognition

For the AP, recognition entails maintaining her/his professional integrity enough to be able to initiate a process of constructing recognition of the other's state of surrendering.[58] Accordingly, the AP's struggle towards recognition, on top of the patient's abandonment of control and final surrender, results in the AP's absolute recognition of the patient as an equal.[11] To be able to recognize the patient's state of surrendering it is essential for the AP to be aware of the patient's vulnerability prior to induction. Recognition makes it possible to distinguish between various forms of social interaction, as they can differ in terms of how the AP acts towards the patient[11], either recognizing the patient prior to induction or prioritizing intraprofessional recognition.

Previous Research

Contemporary Research on Surrendering and Recognition

Surrendering

Scientific research on the patient's surrendering experience as well as the AP's ability to recognize it is scarce. The concept of surrendering is discussed within humanistic psychology where Branscomb[61] suggests that it represents a commitment to act in faith. In this way, surrendering means trusting in one's own safety and hence enables the genuine psychological and spiritual renewal needed to go forward in life. It is, according to Branscomb[61], the therapist's role as a professional to guide, accompany, and witness the patient's journey to surrendering.

Gunnlaugson and Moze[62] studied surrendering in the field of communication and how it could better enable groups to fulfil their task of collective intelligence communication, as seen in the political sciences and social media. The collaboration and collective efforts between individuals could be built on a five-step model; *surrendering into witnessing*, comprising the following phases:

- Surrender into presence
- Become established in the shared presence
- Connect to witnessing awareness
- Come from the space of the witness in your listening and speaking
- Support the we-space in this practice by resting in deeper stillness and attention when not engaging directly with the group.

This process could, according to Gunnlaugson and Moze[62], help humans to better accept the unknown by sustaining involvement, attention, and curiosity towards fields of knowledge that are not currently understood. However, the model of surrendering into witnessing has not been developed or tested for use within the field of nursing, making it difficult to say how it could fit or be used in the field of anesthesia nursing.

Grauer[63] argues that the urge for self-preservation is essential for soldiers surrendering in war, thus suggesting a new theory of surrender in which surrendering is most likely to occur when soldiers are under the impression, or have the have the expectation, that they will receive humane treatment and that their time in captivity will be short.[63]

The theory was derived from researching the surrender rates in World War I and thus represents a completely different field of research than perianesthesia nursing. However, similarities exist in terms of the surrendering person's expectations and how she/he chooses to deal with them. Dialogue and visual contact with the AP prior to induction could enable the patient to trust her/his expectation of being taken care of, which is a precondition for surrendering.[59]

Wong-McDonald and Gorsuch[64] suggest that religious persons might experience an increased sense of well-being and deeper faith when letting go of the self and surrendering to God, implying that one's locus of control is in God rather than in luck or powerful others. However, they found no significant association between personal control and the surrendering experience. Therefore, surrendering may be seen as an act of personal control, i.e., when a person surrenders she/he chooses to do so and let go of the control she/he has.[64] Additionally, in a study by Clements and Ermakova[65], the findings indicated that persons who are 'high in surrendering' have a reduced risk of developing stress related illness than those who reported a lesser degree of surrender to God, which implies that letting go of self-centeredness and being compliant to a faith might reduce the incidence of stress related health problems.[65] Although the findings are close to the health sciences, they are nevertheless anchored in psychology and theology, thus their similarity with and usefulness in anesthesia practice requires further investigation and discussion.

Recognition

On the other side of the spectrum is the AP's ability in to recognize surrendering in the other, i.e., the patient, concretized in the following quotation:

> *"A patient who accepts the anesthesia mask meets my gaze and holds it and she/he dares to breath and keep calm. A patient who frequently shifts her/his gaze or closes her/his eyes and just wants to shut everybody out … would rather not be there."*[58]

A previous study by Liebenhagen and Forsberg[58] showed that recognition of the patient's surrendering to anesthesia is a process based on three main categories; Creating a trusting relationship, Working with the technology, and Establishing recognition. The study showed that the nurse anesthetists' thoughts and feelings are related to their active efforts to construct a basis for recognition of the patients' surrendering experience associated with anesthesia induction. Furthermore, recognition was preceded by an effort to create a trusting relationship with the patient. The various strategies for creating trust involved mediation, e.g., being present and providing comfort. The nurse anesthetists' attentiveness in the process involved strategies of working with the technology that were communicated to the patient and the anesthesiologist. The final phase of establishing recognition was binary, that is, although the nurse anesthetist wanted to recognize the patients' vulnerability and ensure the best possible care, they were nevertheless aware that this was not always possible.[58] However, in the findings of

Liebenhagen and Forsbergs's study[58], intraprofessional recognition was seen in terms of using the patient as a tool for strengthening the AP's own position as both a professional and a person instead of acknowledging the patient's vulnerability.

In a literature review Steis et al.[66] found that the act of recognition is a process that could enable a response, e.g., from the patient. However, it is not clear whether the enabling response incorporates the patient's trust in the nurse. Steis et al.[66] highlight the importance of recognition in the contextual field of nursing as the concept would aid nurses to better understand their inner thoughts and performances in the nurse-patient relationship.[66] Nevertheless, they conclude that the concept of recognition is a foundation of nursing science and that there is much to investigate and learn about recognition and what it represents in nursing practice in general.[66]

Anderson[67] indicated that there is a connection between nurses' communication skills and the recognition they receive as professionals. She argues that professionalism is one of the most central and salient aspects of quality nursing. For that reason effective communication with fellow colleagues in the healthcare organization and with the public is necessary in order to successfully care for patients. The recognition received in a multidisciplinary team and from the public can thus have a positive influence on nurses' self-confidence. Although Steis et al.[66] and Anderson[67] make a valuable contribution to our understanding of recognition, further innovative studies are required.

Honneth[68] takes a somewhat different point of view and argues that due to the economic cycles of unemployment, an increasing number of individuals are at risk of not being recognized for their acquired abilities. Recognition of one's acquired abilities enhances one's social esteem and thus plays an integral part when evaluating one's own contribution to society. Then, a person's struggle for recognition is directly linked to the contributions she/he can make to society at large and in context specific situations.[68] Being unable to contribute affects one's social esteem and increases the struggle to be recognized by the others. This reasoning is relevant to the nurse-patient encounter where the AP's recognition of the patient's surrendering might help the patient to trust in the AP, thus enabling a dignified surrender in conjunction with anesthesia induction.[58]

Research on the concept of recognition in the social sciences has helped to generate a theory for understanding intercultural conflicts; recognition theory. Recognition is of importance when addressing equality and difference in a multicultural society, i.e., we all have the same needs in terms of our wish for love, rights, respect, and social esteem. However, Herzog claims[69] that there is also inequality in the fact that a person needs recognition for creating her/his own autonomy, self-respect, and self-confidence.

Contiguous Research

Previous research within the field of perianesthesia has mainly focused on the physiological and psychosomatic influence of GA, patients' experiences of GA, perioperative communication and dialogue, perioperative advocacy and professional conduct.

The Physiological and Psychosomatic Influence of General Anesthesia

In a physiological study by Cheeseman et al.[70] it was hypothesized that GA could affect the circadian body clock, negatively influencing well-being in terms of biochemistry and behavior due to the fact that patients often show signs of sleep disruption, fatigue, and confusion about the time of day. Based on their findings they suggest that GA administered during the day causes a persistent and marked shift in the body's circadian clock, leading to "jet lag" and impaired time perception.[70] Furthermore, there are indications that the actual depth of GA might cause cognitive impairment, e.g., in word-recall, for up to three months.[71] Because GA interrupts neuronal activity, the communication between different brain regions is affected. It has been shown that in elderly patients aged 60 years and over, the brain may have a harder time rewiring the connections between the different regions after anesthesia.[71] Hence, elderly persons could be at greater risk of cognitive impairment after GA.

Although GA has an impact on patients' cognitive state in the postoperative phase, there are also studies that show how GA affects patients psychosomatically prior to induction. In a survey of anxiety prior to anesthesia in 400 patients, Mavridou et al.[72] found that 84% feared postoperative pain, 65% were anxious about not waking up after surgery while 60% were concerned over postoperative nausea and vomiting. Additionally, women seemed to find it easier to express their fears about anesthesia with 85% of the women reporting anxiety compared to 75.6% of the men.[72] Paradoxically, GA has been shown to be the method of choice for patients who fear waking up during surgery.[73] At the same time, there is a higher incidence of preoperative anxiety among obstetric patients compared to those awaiting general surgical procedures.[73] However, Maheshwari and Ismail conclude that patients scheduled for elective caesarian section have a higher frequency of anxiety (72.7% /N=154) in which GA was preferred over regional anesthesia.[73]

Other studies support assumption that music during anesthesia induction can have a positive effect on patient safety during GA. Mira et al.[74] found in their study on cats that they process auditory sensory stimuli with music during GA and that the music genre could affect the respiratory rate and pupillary diameter. On the basis of their findings they conclude that music during anesthesia might contribute to the need of lower doses of anesthesia drugs and promote patient safety by lessening any undesirable side effects of GA, e.g., hemodynamic instability.[74] This supports the findings of

Nilsson[75] that music can be used as an audioanxiolytic and audioanlagetic for patients undergoing perioperative care, as it reduces their distress and promotes comfort and relaxation.[75] By measuring the stress response among patients who had undergone cardiac surgery, Nilsson[76] found serum cortisol levels to be significantly lower among those listening to music than those who did not. Furthermore, music reduced the respiratory rate and mean arterial pressure postoperatively.[76]

Patients' Experiences of General Anesthesia

After anesthesia induction, the patient's airway is secured either by a laryngeal mask or through intubation. However, some patients might require a different approach to airway management, e.g., because of impaired neck mobility. Therefore, other studies have focused on the patients' experience of being intubated while awake, i.e., during the management of a difficult airway. The interviews with 13 patients conducted by Knudsen et al.[77] revealed the importance of personalized information about fiber-optic intubation while awake in order to be better prepared for what is to come. In addition, patients who received breathing instructions and confirmation through eye-contact seemed to have a reduced sense of distress during the procedure.[77] However, some patients felt overwhelmed by the information given to them prior to intubation and expressed a greater need for knowledge about how they would be cared for during fiber-optic intubation while awake.[77]

Hocking et al.[78] developed, validated, and introduced a questionnaire to measure patients' perception of anesthesia quality. The most important aspects of patients' experiences of anesthesia were identified as: postoperative nausea and vomiting, postoperative pain management, and communication with the anesthetist. However, the treatment differed because some anesthesiologists changed their practice as a result of feedback from the questionnaire. The use of antiemetics was reported to be higher when both a senior and a trainee anesthesiologist were present during the anesthesia.[78] The idea behind the questionnaire is that feedback from previously anesthetized patients could help to improve patient experiences in areas of concern related to anesthesia.[78]

Use of the hypnotic agent Propofol® can cause a phenomenon called Propofol-Induced-Pain at the injection site. In a study by Wang et al.[79] 8.5% of 448 participants who underwent an elective open thyroidectomy could recall a sensation of Propofol-Induced-Pain during induction, where 89.5% graded the pain as mild and thus considered it temporary and acceptable. Another 7.9% experienced moderate pain while the remaining 2.6% reported severe pain. Hence, the findings support the idea that Propofol-Induced-Pain is a relatively minor problem for patients undergoing elective open thyroidectomy.[79]

While patients' concerns about nausea and pain might be present preoperatively as well as postoperatively, there are additional concerns that are of significance for both patient

and AP perioperatively. In a cohort study of 312 patients from the anesthesia awareness registry of the American Society of Anesthesiologists, it was found that 68 participants could provide descriptions of events during anesthesia induction and/or maintenance.[80] The awareness episode was most common (85%) during maintenance and 76% of the participants had no or low concentrations of anesthetic agents at the time of recall awareness.[80] Episodes of awareness recall mostly concerned hearing voices or other sounds, feelings of tugging, pulling, and pressure along with experiencing anxiety, fear, and panic. The findings also highlighted that half (49%) of the participants received expressions of concern from the AP and/or the surgeon, while only 10% were referred for counseling in order to cope with their anesthesia awareness experience.[80] The participating patients expressed that they wanted their recall to be confirmed and wished to receive an explanation of what had happened and to have their experience investigated.[80]

Perioperative Communication and Dialogue

The AP's communication with the patient prior to induction comprises; introducing her/himself, informing about the various steps in the anesthesia process, and responding to the patient's thoughts and questions, while simultaneously working with the technology. Although the timeframe for intraoperative dialogue with the patient is limited, Lindwall and von Post[81] showed by means of a literature review that active interaction with the patient enabled nurses to develop an increased sense of responsibility for their patients. The interpersonal dynamic in the caring encounter benefits both parties in that it can give professional caregivers an increased sense of meaning in their work while at the same time ensuring that patients know what to expect before various nursing interventions.[82] However, more recent research suggests a structure in the perioperative dialogue based on what phase of the perioperative process the patient is in. Preoperatively, the dialogue is colored by the patients' suffering while waiting for surgery.[83] On-going interaction between the operating theatre staff and the patient facilitated continuity intraoperatively, thus helping to create a sense of togetherness. Postoperatively, the dialogue represented a form of recognition of the patient's uniqueness in that the patient has been seen.[83] Pulkkinen et al.[83] argue that a perioperative dialogue with the patient not only ensures dignified and personal care but also represents a model of caring.

Even if a perioperative dialogue is undertaken, the words used to build communication are of significance for the patient's peri-operative well-being. Previous studies have revealed that patients who heard negative words or comments prior to anesthesia experienced more anxiety and pain than those who had experienced neutral or positive words. Intraoperatively, Smith and Mishra[27] concluded that a calm voice on the part of the AP could help to safeguard the patient's dignity and integrity in connection with anesthesia induction. These findings are supported by Lee et al.[84] who measured the level of anxiety in 175 patients prior to GA. Their findings showed that the interaction

with medical staff and surgeons is vital for reducing and overcoming patients' perioperative anxiety. For 72 % of the participants, the most helpful factor in overcoming anxiety prior to anesthesia and surgery was the surgeon's explanation of the surgery, while 49 % put their faith in the medical staff.[84]

Contiguous research has generated studies exploring what physiological impact the perioperative dialogue might have on patients' well-being. Wennström et al.[85] studied the effectiveness of the perioperative dialogue in five to 11 year old children by measuring salivary cortisol levels postoperatively. All 93 children randomly selected for the study received GA for their elective day surgery and the group that had a continuous perioperative dialogue met with the same nurse pre- and intraoperatively. They found a positive correlation between lower doses of analgesics postoperatively and salivary cortisol levels.[85] Hence, continuity and on-going dialogue were associated with lower morphine consumption and reduced salivary cortisol concentrations.[85] In their study, Wennström et al. suggest that the caring approach of the perioperative dialogue could ensure that the AP has sufficient time to identify the specific needs of the child and therefore help to prevent and/or alleviate perioperative anxiety.[85] At the same time, a hermeneutical study on older patients (67-88 years) undergoing surgery indicated that the perioperative dialogue gave them time to tell their story about their past, present, and future existence.[86] This helped them to be perceived as a unique person seen within their entirety instead of being reduced to a diagnosis for treatment.[86] Accordingly, the participants' need to be seen as a person with a lived experience was underpinned by a wish that the AP would take the time to get to know who she/he is and that there would also be a genuine desire on the part of the AP to want to get to know who the patient is.[86]

Perioperative Advocacy

In an integrative review by Sundqvist et al.[1], perioperative patient advocacy was constructed and interpreted as *doing good for another human being - a balancing act between philanthropy and personal gratification.* The characteristics are:

- Protecting (e.g., being in control of the anesthesia)
- Preserving values (e.g., preserving the patient's values and interests)
- Supporting (e.g., being empathic)
- Informing (e.g., clarifying medical terminology).

First, the AP becomes the patient's advocate by helping the other healthcare professionals to safeguard and care for the patient.[1] Second, the AP delivers genuine care by being emotionally engaged, although the actions involved in advocating for the patient might have an impact on the AP her-/himself.

This is characterized as the AP being:

- Vulnerable (e.g., hesitates to advocate for the patient due to being questioned by colleagues)
- Constrained (e.g., the AP's concerns are disregarded by the surgeon or anesthesiologist)
- Satisfied (e.g., speaking up for a unconscious and exposed/vulnerable patient intraoperatively).[1]

The above characteristics of perioperative patient advocacy are in line with Shannon[87] who states that the role of being the patient's advocate involves having the backbone to speak up for the patient when concerned about her/his safety and/or well-being. This corresponds well with being at the bedside of the patient peri-operatively, monitoring vital signs, assessing and adjusting the care in accordance with the patient's physical responses. In addition, it requires the nurse to be able to signal to other team members (anesthesiologist or scrub nurse) when there is a change in or problem with the patient's clinical status or when the patient's wishes are not met.[87] For the conscious patient, advocacy incorporates helping her/him to sort through complex choices to facilitate patient autonomy. Thus patients need an advocate to help them navigate during the different phases of their care.[87]

As stated earlier, the AP's attempt at patient advocacy might be obstructed due to diverse perceptions among other team members on how the care should be delivered.[1] In a sense, constrained obstructed advocacy could stem from a hierarchical relationship within the team (nurse anesthetist vs. anesthesiologist) where straightforward communication misunderstandings might alter the AP's view of her/himself as the patient's advocate.[87] Shannon[87] states that good communication among team members not only improves patient outcomes but increases patient satisfaction as well as work satisfaction among staff members.

For the APs', the perspective on their own role as patient advocates was considered as holding the patient's life in their hands.[88] This implied being the provider of dignified and safe care under the obligation of a moral commitment to the patient. Sundqvist and Anderzen-Carlsson[88] explain this as defending the patient's rights, treating the patient with respect, and with the ambition of creating trust in the encounter. Intraoperatively, this also implies being vicarious to patient autonomy and ensuring that the patient's needs and wishes are safeguarded and met. In providing safe care the AP could make sure to be one step ahead and prepared for adverse events.[88] This preparatory approach can be seen in the light of safeguarding the patient from harm, which requires a medical responsibility for the patient, underpinned by a moral commitment that could be experienced as overwhelming when faced with time constraints in the operating timetable.[88]

Professional Conduct

The AP's professional conduct is mirrored in her/his ability to support the patient during the phase of peri-anesthesia care.[89] Per se, professional conduct in anesthesia care is affected and restricted by the healthcare organization's demands on productivity, which means adhering to the operating time schedule, as well as possible pressure from co-workers to perform.[89] Consequently, being unable to act in the manner that the AP believes is morally correct could affect her/his moral conduct and lead to a fragmented self-image, which might result in the AP cutting corners and negatively influencing patient care.[89, 90]

In a study by Dumouchel et al.[91] it was found that nurse anesthetists were negatively affected when pressured to administer anesthesia or when interprofessional struggles between nurse anesthetists and anesthesiologists occurred. Therefore, when moral distress impairs the conduct of the AP she/he needs to know how to alleviate her/his moral distress in order to ensure safe anesthesia care.[91] In addition, Wong and Qiaowu[92] conducted a study where student nurse anesthetists' personality characteristics were related to safe versus unsafe practice. In their study, they showed that the intrapersonal personality characteristic of being observant and having the ability to work well under stress contributed to safe anesthesia practice. Aspects of interpersonal personality characteristics were also of importance for safe anesthesia practice. These aspects comprised being able to comprehend instructions, having the ability to be a team player, and having good communication skills.[92] In contrast, inability to work while stressed, inability to be a team player, displaying poor communication skills, being ignorant, being a person with a "God syndrome" or constantly blaming the AP for their shortcomings were personality characteristics that contributed to unsafe anesthesia practice.[92]

Elmblad et al.[93] studied the prevalence, severity, and consequences of workplace incivility (e.g., being rude and/or discourteous) among nurse anesthetists in Michigan, USA. Their findings reveal a relationship between workplace incivility and professional burnout and that such incivility is best managed through a zero-tolerance policy.[93] Moreover, developing an understanding of how team members and patients experience the work environment could help to prevent incivility in the workplace. When unmanaged, workplace incivility generates high-stress interactions that risk eroding the team concept and the quality of care delivered.[93] Hence, they conclude that APs should communicate, treat others in the same manner as they themselves would like to be treated, and that workplace behavior is the responsibility of all staff members.[93]

Essence

To conclude, the phenomena of surrendering and recognition may rest firmly on and be dependent on previous knowledge of patient experiences of anesthesia, perioperative advocacy, perioperative communication and interactions as well as professional

conduct, as these aspects might be related to the patient's ability to surrender and the AP's ability to recognize the patient's struggle. However, as there is little research on patients' surrendering experience in connection with anesthesia or on the AP's obligation to recognize the exposed and vulnerable patient during interaction prior to anesthesia induction this in-depth exploration and theory development was warranted.

Rationale

The idea behind the theory development in this thesis was to generate, explore, and evaluate specific concepts related to the GA induction experience from both a patient and professional (AP) perspective. Furthermore, to highlight and describe the relationship between the concepts[55], herein termed Surrendering and Recognition.

From the literature and recent scientific exploration it is obvious that the core of the interaction between the vulnerable patient and the AP involves the challenge of recognizing the patient's state of surrendering.

First, Studies I, II, and III were conducted because no description of surrendering as a concept based on the patient perspective in anesthesia care was found. Equally, no components of the concept of recognition from the AP perspective in anesthesia care had previously been sought and identified. Hence, Study IV was performed.

Second, there was no existing theoretical framework that can support the AP's interpersonal relationship with the patient prior to anesthesia induction. Thus, a second rationale behind this thesis was to develop a theoretical construct for professionals undergoing anesthesia training or actively involved in anesthesia practice.

Third, to develop quality healthcare it is important to be able to measure and evaluate patients' experiences of surrendering, also labelled Patient Reported Experience Measures (PREM)[94], but there were no validated instruments for measuring this clinical phenomenon in the context of the anesthesia induction process. Hence, the third rationale was to develop the anesthesia surrendering instrument (ASI) as a PREM measure.[94] At the same time, the psychometric properties of recognition could be investigated by developing an instrument to explore the dimensionality of Recognition Ability in Anesthesia Care (RAAC) among nurse anesthetists'.

The overall intention was to provide a solid ground for development of a future middle-range caring theory supporting the interpersonal relationship between the patient and the AP during the conscious anesthesia process until anesthesia induced unconsciousness occurs.

Main Aim

The main aim of this thesis was to explore and describe the process of interpersonal dynamics in the caring encounter between the patient and the anesthesia provider in connection with anesthesia induction and to explore and measure two specific theoretical constructs in this context.

Specific Aims

Study I

The aim of this study was to investigate how adult patients experience and cope with the anesthesia induction period, i.e., before and during total intravenous induction.

Study II

The aim of this study was to develop and test an instrument to measure surrendering at the time of anesthesia induction and to explore the construct validity.

Study III

The aim of this study was to further evaluate the validity and reliability of the entire Anesthesia Surrendering Instrument.

Study IV

The aim of this study was to explore the dimensionality of recognition in anesthesia care based on the existing grounded theory of recognition and through the development of an instrument labelled; Recognition Ability in Anesthesia Care (RAAC).

Methods

The Research Process

The framework for the research in this thesis is built on two methodological paradigms that serve as a foundation for each of the four studies.

First, the point of departure of the research process was a paradigm of induction and the methodological approach of grounded theory was employed. This initial approach originates from the social sciences and therefore seeks to develop theory based on empirical data. In line with inductive methodology, the data were collected by means of individual interviews with patients and nurse anesthetists between 2012-2015. The data collection resulted in two separate inductive studies; one comprising the patient perspective (Study I) and the other the perspective of the nurse anesthetist.[58] The grounded theory approach was the method of choice for both studies because of the aim; *to explore and describe the process of interpersonal dynamics in the caring encounter between the patient and the AP in connection with anesthesia induction*, which required a sociologically inspired scientific method. However, although the interviews with the nurse anesthetists were initially part of the research process and thesis, it was decided to present the findings as a separate study by Liebenhagen & Forsberg[58], independent of the thesis. Therefore, the latter will not be presented in the following tables (1 and 2) that provide an overview of the reseach process in addition to hospital types, the sampling technique, and participants. Instead, a third quantitative study was included that enabled me to perform a more in-depth analysis of the internal consistency reliability of the ASI and the patient's surrendering process (Study III).

Second, the research process proceeded to a paradigm of deduction in which psychometric methodology based on psychological sciences was used. In order to meet the second main aim of the thesis; *to explore and measure two specific theoretical constructs in this context*, the requirement for this methodological orientation entailed a two phase structure. The initial phase covered the development of two separate instruments for the two groups under study, one for patients; The Anesthesia Surrendering Instrument (ASI) (Study II) and the other for nurse anesthetists; The Recognition Ability in Anesthesia Care (RAAC) (Study IV). The main source of item development was the two previously conducted inductive studies, which means that the items correlated with the two grounded theories generated (Study I, and the independent study;

Constructing Recognition of the Other's State of Surrendering – A Grounded Theory).[58] The following phase involved testing and measuring the construct validity of each instrument. This required the statistical tool of principal component analysis (PCA), which made it possible to measure perceptions, attitudes, skills, and abilities in each group. Subsequently, Study III comprised statistical reliability analysis for further assessment of the ASI by means of a corrected item-total correlation (CITC).

An overview of the research process is presented in Table 1.

As stated earlier, the participants were patients and professionally active nurse anesthetists employed in southern Sweden. The criterion for participants in both groups were identical in terms of temporality and physicality context. The physical context in both methodological paradigms and for all the studies in this thesis was anesthesia care at operating theatres in local, regional or university hospitals in southern Sweden. The temporality concerns the timing of the investigation into patient and nurse anesthetists' experiences of anesthesia induction.

An overview of hospital types, the sampling technique, and participants is presented in Table 2.

The combination of qualitative and quantitative methodology for the studies in this thesis is based on the fact that both approaches serve as tools for grouping context specific traits.[95] Inductivity enables exploration and identification of specific concepts at an early stage, thus providing a better understanding of a phenomenon while at the same time emphasizing any possible relationship between the context, researcher, participant, and the phenomenon.[95] The phenomenon can be further investigated deductively in terms of interrelationship among latent variables (e.g., items), thus revealing the underlying dimensional structure.[4, 95] In addition, the instrument specific psychometric methodology used herein was employed for construct generation and validation.[4, 95] The usefulness of both paradigms and their related methodologies has enhanced this thesis by means of:

- Inductivity: a better understanding of the concept (surrendering)
- Inductivity: illustration of the structure of the concept's social process (surrendering to anesthesia)
- Deductivity: measurement of interrelationship among items and dimensions by means of principal component analysis (surrendering and recognition)
- Deductivity: generalizing qualitative findings through measurement of the construct validity of the concept specific instruments (surrendering and recognition)
- Deductivity: refinement of the ASI through reliability analysis across gender and age groups.

Table 1. Overview of the Methodological Paradigm and Research Process.

Paradigm	Method	Type of Participants	Data Collection Method	Analysis	Name of Study	Sequence
Inductive	Constructivist grounded theory	Adult patients	Individual open-ended interviews	Constant comparative method (CCM)	The courage to surrender–Placing one's life in the hands of the other	I
Deductive	Instrument development and psychometric testing	Adult patients	Questionnaire	Item-content validity + scale-content validity + construct validity by principal component analysis (PCA) with orthogonal varimax rotation	Development and psychometric exploration of the Anesthesia Surrendering Instrument (ASI)	II
Deductive	Psychometric testing for scale homogenity and item reduction	Adult patients	Questionnaire	Corrected item-total correlation (CITC) and Chronbach's alpha for scale homogenity and reliability analysis	Surrendering to anesthesia - further validation of the Anesthesia Surrendering Instrument (ASI).	III
Deductive	Instrument development and psychometric testing	Nurse anesthetists	Questionnaires	Item-content validity + scale-content validity + construct validity by principal component analysis (PCA) with orthogonal varimax rotation	Exploring the dimensionality of recognition ability in anesthesia care	IV

Table 2. Overview of the Hospital Types, the Sampling Technique, and Participants.

Studies I-IV	Type and Number of Hospitals	Sampling Technique	Distributed Questionnaires	Response Rate (%)	Participants Excluded n=Σ	Participants Included N=Σ	Included Participants by Gender n=Women	Included Participants by Gender n=Men	Age Range (Years)
I	One regional hospital	Focused selection at preoperative clinic generated a pool of potential participants after which theoretical sampling began	*No questionnaires* 26 eligible participants contacted for interviews (two declined partic.)	92	7	17	10	7	28-77
II	One local, one regional, and one university hospital	Purposive sampling at surgical day-care unit	225	93	7	202	114	88	18-80
III	One local, one regional, and one university hospital	Purposive sampling at surgical day-care unit	150	84	7	120	73	47	18-83
IV	Four local, four regional, and one university hospital	Purposive sampling at operation theatres	357	54	8	185	not requested	not requested	not requested

Generating Hypothesis using Inductive Methodology

Interviews: Study I

Data for Study I were obtained by means of open-ended interviews. The recommendations of Charmaz[6] on how to explore situations, perspectives, and subjective emotions associated with the participants' experiences served as inspiration. This is in line with the constructivist notion that the generated data emanate from the researcher's and the informant's joint motivation to investigate the area in question. The interview usually started by asking the participant to; "*Tell me about when you first met the nurse anesthetist*", and proceeded to; "*Tell me about how you felt when the anesthesia induction commenced*" later on in the conversation. The open-ended approach helped the participants to elaborate on their narratives by allowing them time and space describe their experiences in their own words and at their own pace. The participants' confidence in me as an interviewer was generated by giving them time for thought, confirming them, and following up on what was said during the interview.

The more hands on aspects of the interviews were inspired by Fisher and Geiselman's[96] cognitive interview technique on how to conduct a cognitive interview in order to stimulate the participants to provide as much relevant and descriptive information as possible. This is in line with viewing the participants as self-reflecting persons who construct their own conceptions about the world they perceive.[96] Data generation was facilitated by enabling the participants in Study I to more vividly recall memories of the anesthesia induction experience. To recreate the context in which their anesthesia experience took place the participants in both studies were asked about which arm the intravenous access was placed in or where the AP was standing at the time of induction. In accordance with Fisher and Geiselman[96], to further facilitate memory retrieval the interviews were conducted in a room in close proximity to the operating theatre or, if that was not possible, in the participant's home.

Areas related to cognition covered the participants' thoughts, emotions, perceptions, and actions, which were investigated by means of recall questions, e.g., "*What were your feelings?*", "*What were you thinking about?*". More specific questions were, e.g.; "*What did the operating room look like?*", "*What emotions do you associate with general anesthesia?*", and "*How did you handle your worries at the time of induction?*".

All interviews in Study I were transcribed immediately, or proximately, afterwards.

Grounded Theory: Study I

Study I describes how data were obtained from patients through interviews conducted within three weeks of hospital discharge.

Grounded theory in accordance with Charmaz[6] was used for the qualitative study in this thesis. The methodological denominators for the grounded theory study are presented below.

Preconceptions about the Research Area

According to Charmaz,[6] every researcher is influenced by preconceptions. It is therefore up to the researcher's responsibility to determine how to handle and make sense of these preconceptions.[6] A strategy used in my inductive approach is to acknowledge the fact that I have a deep familiarity with the context and discipline of anesthesia. However, according to Charmaz[6], this familarity is also a prerequisite because it comprises in-depth knowledge as well as an understanding of the participants' experiences. Furthermore, using a reflective approach[6] during the interviews and data analysis enabled me to question my own perspective on what it means to be anesthetized and what the practice of anesthesia care means for me professionally compared to what it means for my colleagues.

A Point of Departure and Selection

The point of departure for Study I was reaching agreement on the inclusion criteria and participants.[6] In addition, it was established that no previous studies with the same aim and using a grounded theory approach had been conducted within this specific field.[97] Potential participants were adult patients who had recently experienced GA. Recently was defined as within three weeks of the interview. A decision was made to:

- Minimize the risk of retrograde amnesia, meaning that only patients who declined benzodiazepines as premedication were included in the study. This step was carried out by a nurse anesthetist/anesthesiologist in the preoperative clinic where the patients were medically assessed and received information about the anesthesia. Hence, a focused selection was added between the point of departure and the theoretical selection
- Ensure that the potential participants had recovered sufficiently, both physically and emotionally, to participate in the study.

Theoretical Sampling

The development of categories and theory originated from the theorization of the participants' subjective experiences. Consecutively, the theoretical sampling was based on data from the participants who were singled out in the focused selection. Applying theoretical sampling meant looking for data to generate the properties of an emerging

sub- or main category. This, according to Charmaz[98], also implies that the researcher has already drafted an idea about a specific category and tests it against additional data collected from each successive interview. Thus, the grounded theory was developed as it emerged and the theoretical sampling guided the data collection and analysis process.[6]

Initial Coding

Initial coding was performed line-by-line to find words or phrases indicating important categories, qualities, or contexts that related to the research questions. Selected sentences in the transcripts were named on the basis of the assumptions and/or meanings they inferred. For example, in a transcript from one of the interviews the sentence; "*The only thing I wanted was to wake up again, that was my sole thought; perhaps I would never regain consciousness*"[59] required isolating the phrase; *never regain consciousness* and the word; *thought.*

Focused Coding

Focused codes were developed by comparing the data.[6] This meant returning to previously collected data to detect and explain the most frequent and significant line-by-line codes.[6] By doing so, reoccurring codes could be synthetized through the categorization of comparable codes i.e. sentences with a similar content were given the same code.[6] Thus, as the data collection progressed, the data were compared and redefined which, in this specific example, helped to define the sub-category; *Thinking the unthinkable*[59], on which the main category; Preparing oneself to surrender, in the grounded theory was based.

More specifically: (sentence) "*The only thing I wanted was to wake up again, that was my sole thought; perhaps I would never regain consciousness*"[59] → (synthetization to the phrase) *never regain consciousness* + (the word) *thought* → (definining the sub-category) *Thinking the unthinkable*[59] → continuation of data collection. The categorization allowed these sections with similar codes to be formed into sub-categories.[6] Additionally, the procedure enabled us to determine the suitability of the codes when examining the data, where less frequent codes were excluded from further abstraction.[6]

Memos

Concurrent with the initial and focused coding procedure, memos were made for each interview, including questions and thoughts that emerged during the analysis and coding processes. Theoretical sensitivity was stimulated as memo writing served as a methodological strategy for abstraction in that it facilitated the theorizing and development of concepts.[6, 97] The memos were written on the transcribed interview sheet in order to reduce the risk of separate notes being misplaced or lost. Data collected in one interview could generate questions to be posed in the next; e.g., the answer to the question about how the participants dealt with their emotions prior to induction

could generate a memo for the next interview regarding what the participant actually does to maintain or regain control over the situation.

Theoretical Coding

In line with Charmaz, thoughts that evolved during the data collection were associated with the potential relationship between recurrent codes (e.g., line-by-line codes) and categories (sub and main categories) in the theory development process.[6, 98] These thoughts concerned the theoretical process by which the relationship was defined and involved identifying the main concerns and how the participants dealt with them. Therefore, the main categories (what the participants were concerned about) could be correlated to the related sub-categories (how do the participants deal with these concerns?) in the grounded theory. In my analytical process, theoretical coding entailed identifying the "*what*" and the "*how*" as common denominators for the process of core concern (surrendering into the hands of the other), i.e., the grounded theory.

Data Comparison

The constant comparative method[6] (CCM) was used for comparisons between data, data and the categories, the categories themselves, the categories and theory. This method can be seen as analogous to an axial coding procedure advocated by Strauss and Corbin, where sub-categories are compared to main categories.[6] The CCM technique helped to illuminate and determine the mutual relationship between the various codes developed during the focused coding. Therefore, in my opinion, the CCM procedure is similar to focused coding because the latter cannot occur without comparing codes and relating them to the categories to which they belong, which in turn are compared as described above. Moreover, the main concerns of the participants along with the process of change and the ways of dealing with it were identified.

The methodological process for the grounded theory in Study I is illustrated in Figure 1.

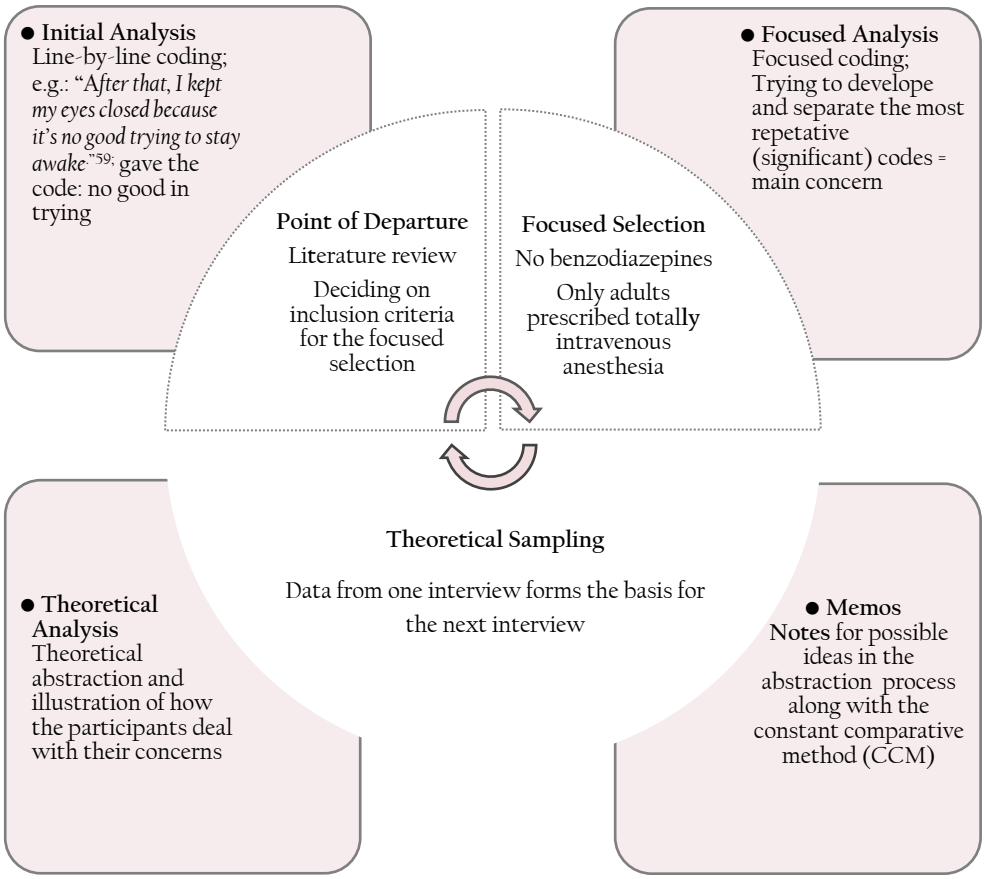

Figure 1. An Illustration of the Methodological Process in the Development of a Grounded Theory in Study I.

Developing Measurement Instruments using Deductive Methodology

The methodology in Studies II and IV follows the same approach and process in terms of instrument development and psychometric exploration.

The methodological process from instrument to psychometric exploration is illustrated in Figure 2.

Instrument Development: Study II

Item Generation

Items for the questionnaire were developed from the previous unstructured interviews conducted in *Study I*, literature on patients' perioperative experiences, and discussions with colleagues and research supervisors. The items covered the three categories identified in the grounded theory of surrendering and are in the form of "I" statements in accordance with the recommendations of Juniper et al.[99] on how to develope a questionnaire.

Scale

As pointed out by Streiner et al.[100], with an odd number of scale points (respons options) in the instrument, there could be a risk that participants might consider values in the middle of the scale as an average, hence leading to a certain regularity. Likewise, a neutral value (e.g. 3 on a 5 point scale) could allow the participant the choice of "expressing no opinion".[100] Consequently, it was decided to let the instrument contain four, instead of five or seven, scale points under each statement (item). Therefore, with an even numbered scale the participants would be required to reflect on the statement and make a choice i.e., to leave the statement unaswered or commit themselves to an answer on the bipolar scale.[100] Thus, the level of agreement on the four-point scale ranged from 1-4 (completely agree, agree somewhat, disagree somewhat, and completely disagree).

Face Validity

Face validity was achieved by evaluation and refinement of the items by two independent groups:

- One group consisting of seven former patients who had experienced GA
- One group comprising seven nursing science research experts.

Each group independently evaluated the items in terms of their appropriateness, simplicity, relevance, and importance.[100] The purpose was to further improve the wording of the items in terms of clarity and simultaneously reduce the number of items.

Content Validity

We chose to follow the recommendations of Polit et al.[101] on content validity (CVI) by asking a group of adults with experience of undergoing GA to evaluate the instrument.

In accordance with Polit[101, 102] and DeVon et al.,[103] each item was reviewed in terms of relevance and clarity on a four-point scale. 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant. Items rated as 3 or 4 were considered essential. Accordingly, the item-CVI (I-CVI) score was calculated as follows:

The number of reviewers rating an item as highly relevant (4) or quite relevant (3), on the four point scale, divided with the total number of reviewers, e.g. five reviewers$_{(r)}$ out of seven$_{(t)}$ rating item *x* as 3 or 4 yields: I-CVI 0.71=$5_r/7_t$.[101] The cut-off limit for when to exlude an item was set in accordance with Polit, Beck and Owen's Evaluation of CVIs with Different Numbers of Experts and Agreement.[101] The index value was computed for each item (I-CVI) on the four point scale in the EXCEL 2010 Microsoft Office software application. With seven reviewers rating the items the cut-off limit was set to 0.71. By summing up the total number of I-CVI scores and dividing the over-all sum with the total number of items the average value for the scale-CVI was accounted for, i.e., S-CVI/Ave.[101] In terms of relevance two items fell below 0.78 (range 0.71-1.0, S-CVI/Ave 0.94) and were thus removed from the instrument. Clarity ranged from 0.86-1.0 (S-CVI/Ave 0.98) with no items removed. (The above principles for calculating I-CVI and S-CVI/Ave were used in **Study IV**).

The final set of items was designed as 36 different statements (items) and the participants stated their level of agreement from 1-4 (completely agree, agree somewhat, disagree somewhat and completely disagree) on a 4 point scale that explores three theoretical concepts and possible constructs of patient experienced anesthesia induction: preparing to surrender, trying to retain control and surrendering.[59] Out of the 36 items 22 reflect aspects prior to anesthesia induction, i.e., arrival at the operation theatre, initial meeting with the AP and intraoperative anesthesia preparations. The other 14 items concern the start of anesthesia induction until loss of consciousness.

Outcome of Face and Content Validation in Study II

The exploration of face and content validity resulted in 10 of the original 46 items being excluded from the instrument due to their close resemblance to other items or that their configuration made them difficult to interpret.

Instrument Development: Study IV

Item Generation

The items in the APs' questionnaire were developed from unstructured interviews conducted in a grounded theory study[58] not connected with this thesis, anesthesia specific literature, and discussions with colleagues. The latter entailed, e.g., how to interpret certain statements and perspectives on anesthesia care. In accordance with Juniper's[99] recommendation on how to develop a questionnaire, the items are in the form of "I" statements and cover the three categories identified in the grounded theory of recognition.

Scale

See; *Scale*, under the sub heading: **Instrument Development: Study II**.

Face Validity

The items were reviewed in terms of their appropriateness, simplicity, relevance, and importance[100] by a panel of seven nursing researchers. The purpose was further improvement of the wording and item reduction.

Content Validity

We chose to follow the recommendations of Polit et al.[101] on content validity (CVI) by seeking agreement among a panel of 10 APs who reviewed the items in terms of clarity and relevance on a four-point scale;1=not relevant, 2=somewhat relevant, 3=quite relevant, 4=highly relevant.[100, 101 103] An index value was computed in EXCEL 2010 for each item (I-CVI)[102] on the scale. Items rated 3 or 4 on the four-point scale were considered essential. Items with an I-CVI value of 0.8 were reconsidered or excluded, resulting in five items being removed due to lack of relevance. In terms of clarity, one item had a value of 0.7 and the same value in the relevance rating. The I-CVI range for both relevance and clarity were thus 0.7-1.0. Overall, the items' relevance had an S-CVI/Ave of 0.94 and clarity an S-CVI/Ave of 0.95.[99] This gave a total of 32 items for later/further exploration and analysis.

The items are designed in the form of 32 different statements and the participants state their level of agreement from 1-4 (completely agree, agree somewhat, disagree somewhat, and completely disagree) on a four-point scale that explores three theoretical concepts from the previously developed grounded theory[58] and possible dimensions of how the AP interprets the anesthesia induction phase.

Outcome of Face and Content Validation in Study IV

From the initial pool of 45 items eight items were excluded due to their close resemblance to other items in the instrument or because their configuration was unsubstantiated. Based on an I-CVI value of 0.8 as a cut-off point for retention, five items were excluded due to lack of relevance or clarity.

Scoring Preparation for Principal Component Analysis

The instruments used in the surveys in Studies II and IV contained both positively and negatively worded item responses. This meant that the participants were required to reflect on the statements, leading to a more considered response.[100] Hence, to regulate for imbalance in the analysis the scoring on negatively worded item responses was mirrored, i.e., negatively worded items received the same score as the positively worded items.[100] For example, the scores for the negatively worded (with emphasis on ***not***) statement (A): *I was afraid of not regaining consciousness,* were reversed in the analytical procedure so that they had the same value as a positively worded statement (B), e.g.; *I hoped that the AP would notice me as a person.* A score of 4 (highly relevant) on statement A is considered a 'less good' experience and thus receives a value of 1 when reversed in the analysis. Consequently, a score of 1 (not relevant) on the same statement was

considered a 'good' experience and therefore analogous to a highly relevant 4 on statement B.

Sample Selection: Studies II and IV

Because the same analytical approach was applied in both Studies (II and IV) and due to the fact that the research was restricted by the time limitations of the doctoral program, the sample size was based on Suhr's[104] assumption of a sample-to-item ratio of 5:1. This ratio should be seen as a minimum requirement for a reliable result in a survey, in addition to a minimum requirement of 100 observations.

Sample Selection: Study II

The inclusion criteria for the study were Swedish speaking adults (>18 years old) who had been prescribed GA as part of their out-patient surgery. In addition, potential participants had to volunteer to take part in the study and give their verbal and written consent to the nurse at the surgical day-care unit. The participants were recruited from one university, one regional, and one local hospital in the south of Sweden. Based on a sample-to-item ratio of 5:1, a sample of 180 participants was set as a minimum requirement for analysis of the construct validity.

Sample Selection: Study IV

Nurse anesthetists working in one university, four regional, and four local hospitals in southern Sweden were recruited for the study. The nurse anesthetist had to be a registered nurse in Sweden with a post-graduate diploma in anesthesia nursing and professionally active at one of the nine hospitals included in the study. Based on a sample-to-item ratio of 5:1 a sample of 160 participants was set as a minimum requirement for analysis of the construct validity.

Data Collection: Studies II and IV

Study II

A total of 225 questionnaires were distributed between March and July 2016 and 202 participants volunteered to take part in the study. Data collection took place at the out-patient recovery unit of the nine hospitals. A requirement for reliable data was that the patient did not complete the questionnaire until the treating surgeon and post-operative team considered her/him lucid and fit enough to be discharged. The timeframe for completing the questionnaire was not limited to the time of discharge from the day-care recovery unit.

The participants rated 36 different statements relating to their anesthesia experience and the main categories of the grounded theory (Study I) on a scale from 1-4 (*completely agree, agree somewhat, disagree somewhat* and *completely disagree*). The questionnaire also contained questions about; gender, age, marital status, surgical procedure, and the type of hospital where the participant was anesthetized.

The instrument contained both positively and negatively worded items to reduce the risk of acquiescense response bias, that is, the tendency to respond in the same way to items.[8] Consequently, and in line with Streiner, Norman, & Cairney[100], positively worded items were scored higher then negatively worded ones to prevent imbalance in the analysis.

Study IV

A total of 357 questionnaires were distributed between March and May 2016. Data were collected from 185 voluntary participants and the 32 statements in the questionnaire were related to the previously developed grounded theory on how nurse anesthetists construct recognition of the patients' state of surrendering.[58] Hence, the participants rated their anesthesia nursing actions on a four-point scale (1=*completely agree,* 2=*agree somewhat,* 3=*disagree somewhat* and 4=*completely disagree*).

The questionnaire also explored whether the participants had done advanced level thesis work, if they were content at their current place of employment, if they were satisfied with how nursing is implemented there, whether they considered that they provided good anesthesia nursing, and finally, if they believed they had sufficient opportunities to provide the nursing that they wished to give their patients.

Both positively and negatively worded items were used and, accordingly, positively worded item responses were scored higher to prevent imbalance in the analysis (see Data Collection; *Study II*).[100]

Principal Component Analysis: Studies II and IV

The Statistical Package for Service Solutions (SPSS) version 23 was used for statistical analysis in Studies II and IV.

Principal component analysis (PCA) was considered suitable for exploration of the construct's structure and identification of those components (henceforth; **dimensions**) that define the items. Identified dimensions were statistically expressed with an eigenvalue (λ)>1.0.[100] With PCA we sought construct validity with a high inter-item correlation, indirectly discriminating between items with low inter-item correlation.[100]

Kaiser Normalization Procedure

The Kaiser normalization procedure was used to correct for conceivable high communalities in the data set before rotation.[105] Hence, relative stability was achieved among the dimensions, all of which were equally weighted after rotation.

The Kaiser criterion was considered the best option for item screening because it allows more items to be taken into account. A cut-off value of 0.4 was chosen due to the sample size[105, 106] and to ensure the quality of the results, although a loading value of 0.3 among the items in the dimension is considered salient.[105] Thus, item-condensation was achieved by retaining items loading over 0.4.

Orthogonal Rotation of Dimension Loadings

Orthogonal Varimax rotation was used so that the difference between high and low loadings on each dimension was maximized, ensuring simplicity in the columns of the matrix.[4, 105] Inevitably, loadings in each dimension were either close to 0 or to 1.0. As a point of departure, and to find out if the assumption of equal variances among items was valid, our initial assumption was to reject any correlation among the items. This approach is in line with the hypothesis that there would be no correlation between the items.[4, 105]

Testing of the Null Hypothesis

Bartlett's test of sphericity was used to test the null hypothesis; that there is no relation between the items (the items are uncorrelated) and that the correlation matrix is thus an identity matrix.[4] On the other hand, if the findings indicate a relationship among items in the correlation matrix the null hypothesis is rejected and therefore the correlation matrix is not an identity matrix (that the items, more or less, correlate).[4]

Measurement of Sampling Adequacy

The Kaiser-Meyer-Olkin test (KMO) was used to measure sampling adequacy and test the strength of the relationship among the items. Thus, items that share a common dimension can be expected to have a small partial correlation coefficient.[4] For both Study II and Study IV a KMO value above 0.7 was considered appropriate for considering the overall correlation matrix as dimensional and for the extraction of dimensions.[4] More specifically, an total value of 0.7 was considered an adequate criterion for indicating that the sample size is sufficient in relation to the number of items in the instrument.[4] This is in line with the reasoning of Kaiser[107] where a KMO value of:

- 0.9 and over is marvelous
- 0.8 – 0.89 is meritorious
- 0.7 – 0.79 is middling
- 0.6 and below is mediocre.

Scree Test for Estimating Possible Retention of Dimensions

The Catell's scree test was used to explore distinct breaks between the slope of the descending size of the λ on the scree plot. For this research, the scree test was used as an indicator for assessing how many of the dimensions scored an λ above 1.0. The test could be a solution for selecting the most accurate number of dimensions[105] to include in the results. However , because both studies (II and IV) used the minimum sample-to-item ratio requirement of 5:1 with a potential risk of covariation instability among the items,[104] the scree test is considered less reliable for retention of dimensions.[4]

λ≥ 1.0 for Dimension Retention

The amount of variance among items in the correlation matrix is explained by an λ. The value is unique in that it represents the variance among all items in a specific dimension with which they are associated.[4] Because the actual value derived by the analysis can be either positive or negative, a value above 0 was desired. Thereby, the matrix can be considered positive-definite and hence factorable.[4, 105]

By adopting PCA for psychometric measurement of construct validity, the assumption was that the amount of variance among the items is analogous to the total number of items in the instrument. Therefore, the variance among items can be described as a numerical estimate of communality with the highest score of 1.0 (range 0-1.0).[4] Using the Kaiser-Guttman rule implies that only dimensions with an λ≥1.0 are retained as they explain more of the total variance among the items in the matrix than the opposing dimensions (λ≤1.0).[4]

Item-Consistency

Although the measurement of variance is the main indicator for estimating dimensionality (the possibility of extracting dimensions from the items), an assessment of the matrix consistency contributes to the overall inference.[4] Therefore, the correlation matrixes in Studies II and IV were examined for item consistency in order to identify any items showing a too high correlation (r≥0.8) or an insufficient correlation (r≤0.3). Items ≥0.8 indicate co-variance among two or more randomly latent variables, resulting in multicollinearity and thus should be excluded from further analysis.[4] The opposite would also result in exclusion from the analysis due to lack of variance among the items, giving as many dimensions as the number of items in the instrument.[4]

Internal Consistency

Depending on the number of items clustering on each dimensional loading, we wanted to test internal consistency for each dimension, which would also indicate how well the items in the instrument fit together. Therefore, the degree of homogeneity in the instrument becomes an indirect estimate of the item correlation.[4] The numerical value

of Cronbach's alpha (α) is between 0 and 1.0, where the degree of reliability is consistent with a higher α value.[4, 108] In this thesis, an α-value between 0.7 – 0.9 was considered adequate for the whole orthogonal factor matrix in Studies II and IV.[4, 108]

Direction of Procedural Construct Optimization: Study II

The initial PCA extracted 11 dimensions with just one to four items loading on each dimension. Subsequent extraction went on to test a six-dimensional solution where three out of six dimensions contained more than three items. However, the most optimal variance among items in the dimension was achieved by reducing the number of predetermined dimensions to a five-dimensional solution. This resulted in four to seven items loading in all five dimensions and with no items being concurrently detected in multiple dimensions.

Direction of Procedural Dimension Optimization: Study IV

An initial analysis extracted 11 dimensions with an insufficient number of items (less than three) loading on each dimension. This was followed by testing a six-dimensional solution with four or more items loading on each dimension. However, this yielded unsatisfactory reliability values among the dimensions along with a reoccurrence of some items in a second dimension. The optimal number of dimensions with satisfactory reliability and non-reoccurrence of items among dimensions was obtained with a three-dimensional solution. Here, seven to 14 items loaded in each dimension.

Instrument Refinement

Sample Selection: Study III

As in Studies II and IV, the sample size in Study III was based on Suhr's[104] assumption of a sample-to-item ratio of 5:1.

Participants were recruited from one university, one regional and one local hospital in southern Sweden during 2017. Inclusion criteria were Swedish speaking adults (>18 years) who were due to undergo GA as part of their day-care surgery. Participation was voluntary and the participants provided their verbal and written consent to the nurse at the surgical day-care unit. Patients who had a previous history of GA was excluded because of their preunderstanding, as were those with a cognitive impairment.

Data Collection: Study III

Data was collected at each hospital's recovery unit after the participant was considered lucid and fit enough for discharge by the surgeon, anesthesiologist and perianesthesia-nurse. The 27-item ASI was used to explore the participants' thoughts, emotions, and perceptions related to anesthesia induction.

The same design and procedure as that described under Data Collection in *Study II* was employed.

Corrected Item-Total Correlation: Study III

The Statistical Package for Service Solutions (SPSS) version 24 was used for statistical analysis in Study III.

Newly developed instruments should be checked for homogeneity and a moderate correlation among items in relation to the total score of the instrument.[100] Therefore, in Study III, refinement of the ASI was achieved by means of corrected item-total correlations (CITC), i.e., the correlation between each item and the total score of the remaining items in the instrument. According to Rattray & Jones[8], the CITC analysis enables the assessment of an instrument's internal consistency and to reduce bias each item's score is statistically removed from the instrument's total score prior to correlation. In accordance with Streiner, Norman, and Cairney[100], moderate correlation among items was sought with individual item-values of 0.3 to 0.7 in relation to the total score. Thus, the cut-off limits helped to eliminate weak items (values <0.3) and items that were too narrow (values >0.7). Internal consistency was evaluated for each dimension in addition to being evaluated as a subscale when related to gender (man/woman) and age group (18-49 years and 50-83 years).

Inter Quartile Range

To describe the variability and measure of spread among item responses in the ASI the difference between the highest and lowest scores in the data set was measured. While the md score allowed an overall description of the data by breaking the data set in half, the inter quartile range (IQR) (midspread) indicated the upper and lower quartiles, that comprise the middle 50% of the data set, by breaking the data set into quarters.[9] Thus, clustering of high or low scores would reveal floor and ceiling effects in the instrument. A ceiling effect (positive skew) would indicate that some of the items responses are too predictable and hence the items are not precice enough to capture the characteristics (*alt.* dimensions) of the construct in question. The opposite (negative skew) could be an indication of the items being in the wrong place or to difficult for the repondent to answer.[100]

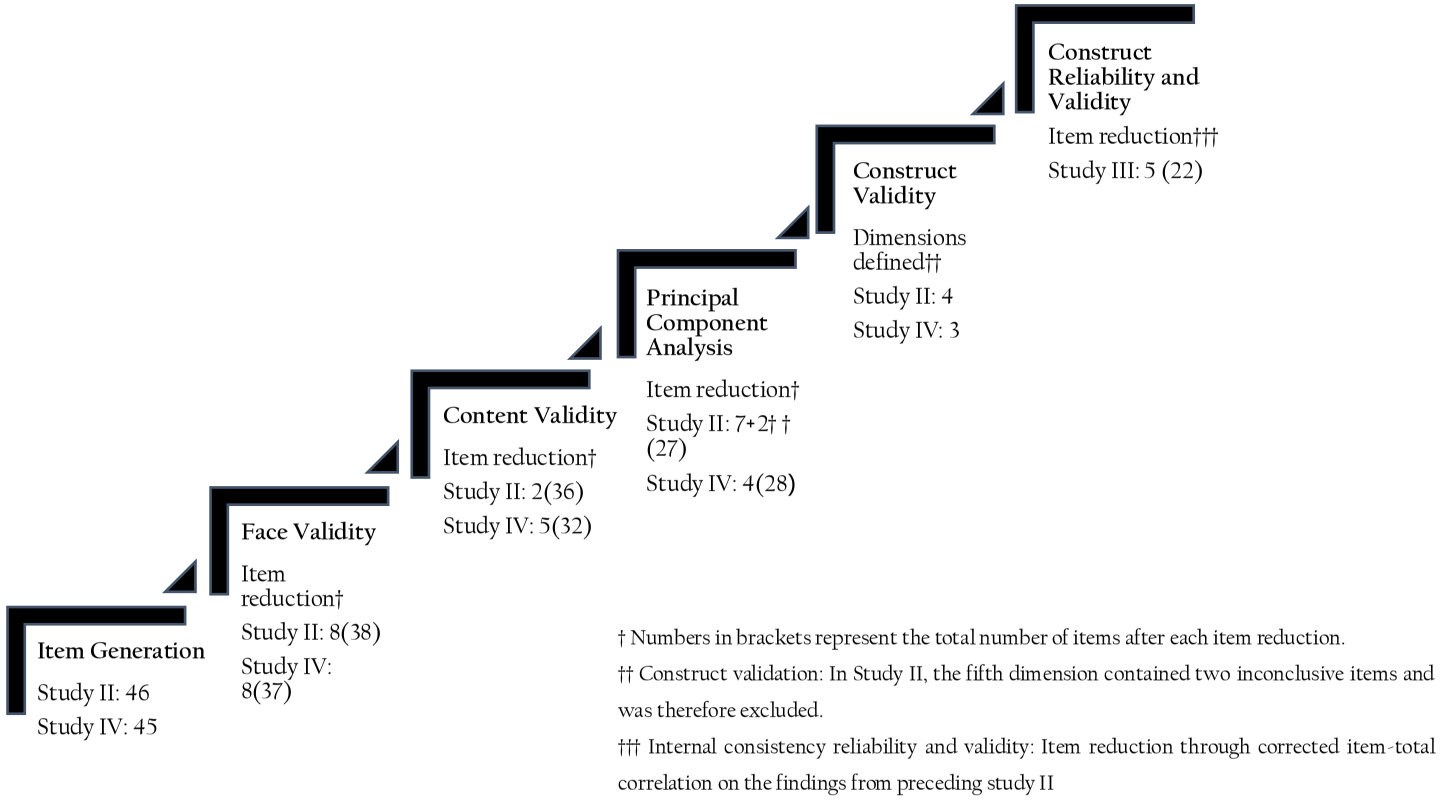

Figure 2. An Illustration of The Methodological Instrument Development Process from Item Generation to Assessment of Internal Consistency Reliability.

According to Norman & Streiner[9], the advantage of using the IQR as a tool for measuring the spread is that it is far less affected by a few extreme scores, making it more reliable in terms of describing response variability.

Ethics

All four studies (I-IV) in this thesis were designed to meet the ethical requirements on information, consent, confidentiality, and utility. They are therefore in accordance with the Helsinki Declaration of 2011[109] and the Ethical Guidelines for nursing research in the Nordic countries from 2003.[110] Furthermore, the participants were guaranteed anonymity and the information they provided was considered confidential and stored in accordance with the Swedish personal data act; PuL-[1998:204].[111]

For the patient focused studies (I, II, and III) a counselor was available in case of any emotional reactions (e.g., worries, anxiety or distress) evoked by the questions or statements in the interviews and questionnaires.

Informed Consent and Freedom of Consent

In accordance with Streiner et al.[100], I believe that an individual's autonomy cannot be fully exercised unless she/he has received sufficient information about the purpose and usefulness of a research study. Only then can a potential participant know what she/he is agreeing to. For instrument development this means that "*if a person cannot understand the nature of the consent, it is unlikely he or she can read and understand the instrument*".[100] With the exception of Study IV, all studies in this dissertation included informed consent, where agreeing to participate meant that the potential participants were informed about the purpose of the specific study and and what they were expected to do. By signing a consent form (written consent) the participants and the researcher have a record of what they agreed to, in addition to the fact that the participant has understood what the study is all about and her/his role. Respecting autonomy also meant informing the potential participants about that they were free to decline participation or to withdraw from the study at any time.[100]

Vulnerability and Confidentiality

The participants' confidentiality was guaranteed in that the questionnaires in Studies II, III, and IV were completed anonymously and each questionnaire was provided with an identification number (code). Only I, my main supervisor and co-supervisor have access to the data of all the studies in this disertation, which are stored in a secure and locked cabinet.

According to Streiner et al., specific vulnerable groups in scientific research are those who are dependent on a legal guardian (health worker, parent, next of kin or spouse) because they are minors, i.e., under 18 years of age, or suffer from mental retardation

or severe psychiatric disorders such as Alzheimer's disease and schizophrenia. In Studies I-IV, no participants stated that they were below the age of 18 years and, to our knowledge, all consent forms were read and signed by the participant her-/himselfe. However, it is impossible to be fully certain that no participant suffered from a psychiatric disorder that would have required assistance from a legal guardian to complete the questionnaires in Studies II-IV. This was less of an issue in Study I because since I personally met and interviewed each of the participants.

Additionally, all of the participants in Studies I-IV were considered vulnerable in that they were in a position of dependency throughout their hospitalization. To my knowledge, all of the participants required surgery in order to regain health, making it necessary for them to submit to the process of being rendered unconscious and a situation that was beyond their control.

Study I

Because this study explored patients' main concerns and how they cope with them prior to anesthesia induction, lucidity and memory in the postoperative period was of significance. Therefore, only potential participants who voluntarily declined benzodiazepine as a premedication were included in the study. This was also in agreement with the anesthesia clinic's policy of respecting the patient's right to self-determination. Hence, the terms and conditions for the anesthesia were agreed between the patient and the AP. Informed consent to participate in the study was obtained from all potential participants.

As memory declines over time[96] the interviews were conducted as soon as possible after the patients' induction experience. A timeframe of three weeks was set for the interviews out of respect for the patients' physical, social, and emotional recovery. The study was approved by the Caring Science Ethical Committee at Lund University, Sweden, (Vårdvetenskapliga Etiknämnden: VEN 2-09).

Studies II and III

Because of the aim to explore the psychometric properties of surrendering in relation to anesthesia induction and at the same time further evaluate the validity (Study II) and internal consistency of the ASI (Study III) we only included participants who had been prescribed GA for their day-care surgical intervention.

The participants' right to self-determination and autonomy was met in that participation was voluntary. In addition, informed consent to participate in the study was obtained from all potential participants on arrival at the day-care unit at the hospital and prior to anesthesia. The study was approved by the Regional Ethical Review Board in Lund, Sweden (Regional Etikprövningsnämnden); Dnr: 2016/80.

Study IV

Study IV psychometrically explored how nurse anesthetists experienced the anesthesia induction process based on the findings from a previously developed grounded theory.[58] Ethical approval was not required as the risk of emotional distress or discomfort was estimated to be low and because Study IV involved staff, i.e., nurse anesthetists.

This is in line with the Swedish Law concerning Ethical Review or Research Involving Humans [SFS 2003:460].[111] However, out of respect for the participants in Study IV and as a precaution we applied to the Regional Ethical Review Board in Lund, Sweden (Dnr: 2016/80) for an opinion or recommendation, in addition to obtaining approval from the operations manager at each participating anesthesia clinic. Potential participants were given verbal and written information about the study and volunteered to participate.

Findings

The key findings in this thesis are:

- There is an interactive dynamic between the patient and the nurse anesthetist in the caring encounter related to anesthesia induction
- The interaction in the encounter is underpinned by two active constructs; Surrendering and Recognition, that form a part of the different dimension
- The caring encounter constitutes a struggle on the part of the patient to build a foundation for surrendering her/his life into the hands of the the AP
- It is possible that the AP seeks to recognize the patient's state of surrendering,
- Each construct works together during the encounter based on a unique 'dealing with it' (*how*), describing their dimensional features
- It is possible to measure the patient's surrendering experience using the ASI
- The professional self-image among 58% of the nurse anesthetists is affected by the recognition received from their employer, among 88% by recognition from their colleagues and among 89% by the recognition received from patients
- That 89% of the nurse anesthetists allowed the patient to participate during induction as a way of recognizing her/him as a person.

The construct of surrendering is part of an interpersonal dynamic between the patient and the AP in which the patient's struggle to surrender becomes an ethical demand, as illustrated in **Figure 3.**

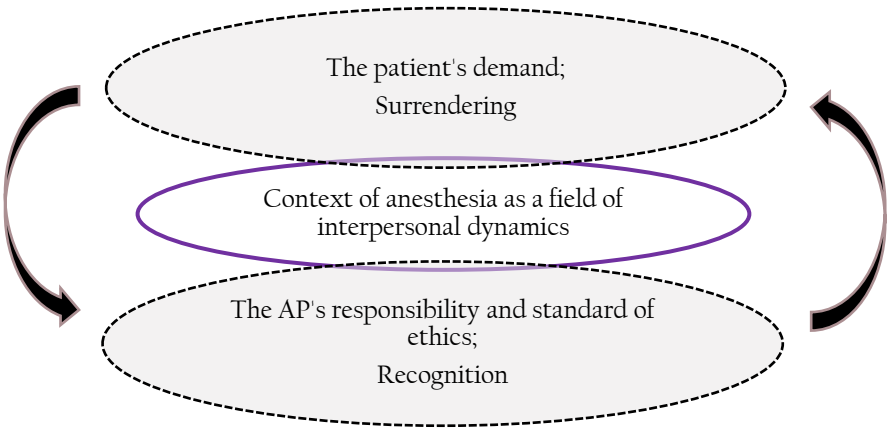

Figure 3. An Illustration of How the Constructs of Recognition and Surrendering Intercept in the Caring Encounter Between the Patient and the AP, thus Generating an Interpersonal Dynamics in the Anesthesia Context.
The arrows illustrate the link between surrendering and recognition. The dotted circles represent that which is abstract in the world of the patient and the AP. The solid circle represents that which is physical; the anesthesia context and operating theatres.

Surrendering to Anesthesia (Studies I, II, and III) – A Processual Categorization and Dimensional Exploration

Having to surrender one's body and consciousness into the hands of an unknown person requires building a foundation for doing so. From a subjective perspective, this foundation is successively generated through the patient's interaction with the AP, the environment, and her/his thoughts and emotions. In Study I, the process over time comprises; preparing oneself to surrender, trying to retain control, followed by accepting and surrendering. However, not all patients follow the above process and instead refuse to accept and do not surrender due to the feelings associated with having to place one's life in someone else's hands. More concretely, this means acknowledging to a greater or lesser degree that anesthesia implies a loss of control to an extent where

it becomes necessary to accept the need to surrender one's life and place it in the hands of a stranger.

In the following, subjective perspectives on the main concerns in the process of surrendering are presented as categories (Study I), while objective measurements of them are presented as dimensions (Studies II, III).

The Processual Category of *Preparing Oneself to Surrender*

The basic driving force in the process seemed to be the struggle to surrender to the inevitable, leading to a desire for some control during the pre-surgery preparations. Preparing oneself to surrender seems to involve finding courage in an unfamiliar and highly technical environment. Being attentive and focused on what was happening was a strategy for trying to anticipate events. Thus, coping by anticipating events was a way of preparing oneself emotionally. The patient's expectations on the surgery could be goal directed, e.g., that it would lead to freedom from illness and negative consequences in everyday life. Those who were not focused and goal directed expressed the hope of gradually loosing consciousness and that the operating theatre staff would be friendly, i.e., they handled the expected loss of control by trusting in the knowledge and skills of the AP.

Their thoughts could focus on the wish of not having to wait and experience anxiety any longer. The mental focus on time and inner distress affected their emotional state, which was not necessarily noticed by staff. Nor did patients express anxiety but instead tried to ignore their emotions and did not tell the AP how they felt.

> ***F:5.*** *When it was time for the anesthesia and the preparations began I was so tense that my whole body was shaking. I thought it would pass if I just tried to relax and I tried to, but the tension in my body remained.*[59]

A strategy used by male participants was to distance themselves from the emotional distress by focusing on the medical technical environment and trying to figure out what the equipment was for. Previous experiences of surgery could lead to recalling procedures, encounters, and complications associated with the perioperative phase. Hence, if pain and severe nausea had occurred on the previous occasion, the obvious strategy was to prepare for the same thing to happen again.

> ***Interviewer.*** *So it was the memory of the previous occasion that made it so unpleasant?*
>
> ***F:10.*** *Yes, perhaps it could be unpleasant or it was a bit like, how can I put it, not déjà vu but rather that I remembered what it was like the previous time, although of course I understood that it was not the same because it is a*

different situation. But nevertheless… When you are there you recall what it was like the previous time".[59]

The participants prepared themselves for a worst-case scenario by thinking the unthinkable, e.g., never regaining consciousness or being semi-conscious during surgery due to insufficient anesthesia. Thus, in order to remain calm and in control of their emotions during the intraoperative phase the participants protected themselves from the challenging environment by actively distancing themselves from the situation.

The Processual Category of *Control*

Despite having no choice but to surrender one's life into the hands of the AP, some participants experienced a need to retain control of the situation. Regardless of various psychosomatic reactions many participants tried to control their emotions. A way of coping with loss of control was to compare one's emotions with the vital signs displayed on the monitor. Participants analyzed and reflected on what was happening in order to control their thoughts and emotions. Before induction some participants sought confirmation from the AP by posing questions and developing an objective approach towards their body and bodily signals.

> ***M:14.*** *[During induction] I lay there analyzing the time and how long it took for the warm sensation to sort of spread. How long would it take before I'd disappear (chuckle)… That was the only thought in my mind; Will the warmth enfold my whole body before I disappear down into the haze?*

While the initial impression of the operating room was overwhelming for some of the participants, their anxiety increased as a result of the focus on technical devices. Self-control before anesthesia induced loss of consciousness could be achieved by building a new role for themselves, which helped them to reflect on the situation in a more detached way. Detaching oneself from the situation and concealing one's emotions could contribute to a sense of not being oneself. It was better to make oneself important and reject the role of a passive actor/and not play a passive role.

> ***F:10.*** *I tried to reflect on the situation.*
>
> **Interviewer.** *How did it help in that situation?*
>
> ***F:10.*** *Solitude is the wrong word… feeling vulnerable or defenseless or something like that. Yes, so that one doesn't become so self-focused, actually.*

The Processual Category of *Surrendering/Not surrendering*

Mutuality and trust in the caring encounter were established when the patients could take part in the anesthesia interventions prior to induction. Actively participating in one's own care could mean holding the anesthesia mask until loss of consciousness occurred. During anesthesia induction the AP could encourage the patient to breathe deeply into the anesthesia mask. This gave rise to thoughts that helped some participants to confirm to themselves what was happening, resulting in surrender and willingness to place themselves in the care of the AP.

Realizing the consequence of surrendering and placing oneself in the hands of the AP meant understanding the need to accept that there is no other option. It also meant being emotionally released by the fact that the worry would soon be over. One participant expressed this realization as follows.

> **M:13.** *I just closed my eyes because it's not worth the effort striving to remain awake.*[59]

Surrendering implied accepting the situation and ceasing all efforts to retain control over oneself. There was no longer any need to interpret impressions and remain conscious.

After eye contact had been established, a moment of trust occurred and surrendering followed. Looking into the eyes of the AP and resting in her/his gaze was a precondition for surrender.

> **F:7.** *So, I looked at him and he looked at me and then I sensed that it became a bit cold and that's the last memory I have* [from the induction].

Eye contact between the participants and the AP was emphasized many times during the interviews. It was a method for establishing contact with the AP, who in turn recognized the patients by means of dialogue and eye contact.

Not Surrendering

Surrendering was not an a self-evident act as some participants tried to retain control during induction, which they described as concentrating on consciousness and maintaining some sort of visual control. In addition, some of the participants marvelled at the fact that they were unable to remain in control despite their efforts to stay awake. Not relinquishing control involved observing the effect of the drugs on the body and remaining sufficiently lucid to reflect on the physiological course of events following induction.

For some participants surrendering was hindered due to feeling suffocated by the anesthesia mask. It required all their willpower to master their panic and focus on maintaining presence of mind. Sometimes they were unable to communicate the feeling

of suffocation and panic to the AP because they fully concentrated on mastering the experience of suffocation and panic.

> **M:16.** *I think I tried to say something to him [the AP]. But I wasn't quick enough (chuckle) and so he* [the AP] *applied the anesthesia mask so I'd be quiet and I fell asleep. It [the anesthesia mask] was pressed down over my nose, which was unpleasant. Yes, he pressed it down.*

When measuring the theory deductively, it was shown that surrendering to anesthesia could be categorized into five main dimensions. However, the fifth was excluded as only two items loaded on it, leaving dimension V inconclusive. The dimensions retained were:

- Preparation by avoidance
- Control
- Preparation by understanding
- Acceptance.

All five dimensions had an λ above 1.0, where dimension I explained 16.6% of the variance, II explained 10.1%, III explained 6.3%, IV explained 5.5%, and V explained 4.8%. The five-dimensional solution explained 43.2% of the variance in the matrix. In dimensions I, II, and III seven items were retained, whereas in dimension IV the six items that clustered above 0.4 were retained. As a result of the PCA seven items were excluded from the instrument due to a dimensional loading value below 0.4. Consequentely, 29 items, out of the initial 36, were retained.

Exploring the *Preparation by Avoidance* Dimension

This dimension had the greatest power of variance after rotation with an λ of 5.95. The following seven items were classified as strategies used by the participating patients in their attempt to cope with the situation:

- Not thinking about the anesthesia
- Avoiding thoughts on the environment
- Ignoring their emotions
- Avoiding thoughts about what was happening
- Monitoring their emotions
- Not thinking about themselves
- Preparing for discomfort.

Exploring the *Control* Dimension

This dimension had an λ of 3.63 and the following seven items demonstrate that the participants attempted to remain in control during induction while dealing with feelings, emotions, and actions:

- Trying to stay awake
- Trying to keep their eyes open
- Trying to maintain control
- Feeling suffocated
- Fear of waking up during surgery
- Feeling defenseless,

Exploring the *Preparation by Understanding* Dimension

In this dimension the participants used their cognitive capacity to help them relate to and deal with different aspects of the anesthesia context. The power of variance was 2.27 and the dimension involved:

- Posing questions
- Attempting to understand the technology
- Looking around
- Trying to understand
- Envisioning the anesthesia
- Observing the AP's work
- Joking.

Exploring the *Acceptance* Dimension

With an λ of 1.98 the fourth dimension was interpreted as submitting to the AP's instructions by:

- Surrendering
- Making eye contact
- Following the AP's instructions
- Being personally received by the AP
- Breathing deeply into the anesthesia mask
- Feeling defenseles.

Demography and Item Response Frequency

Of the 202 participants 44% were women and 56% men with an age range of 18-80 years (Mean 50 years). The majority (72%) were cohabiting and the three most common types of surgery were: breast (23%), hernia (15%), and ear-nose-throat (14%).

Measuring the response frequency on each item revealed that prior to induction 80% agreed that it was important to be recognized and personally received by the AP. Feeling defenseless was experienced by 35% (n=70) of the participants while another 36% tried to avoid thinking about the anesthesia. At the same time, over 80% tried to envision the anesthesia by posing questions and observing the work of the AP. This correlates with the finding that a clear majority (70%) tried to understand what was taking place around them and obtain information about the anesthesia related technical devices.

Prior to induction, over half (52%) of the participants tried to avoid thought on what was happening to them, while 29% used the strategy of ignoring their own emotions. At the same time 27% did not reveal to the AP how they felt inside. Wanting to control their emotions was reported by 58% of the participants, while 18% feared waking up during surgery. The fear of not regaining consciousness was apparent among 27% of the participants.

With regard to the time of induction, 56% of the participants completely agreed that they tried to relax and almost half (46%) felt that they could facilitate the work of the AP during the process. A majority of the participants (56%) tried to follow the effects of the anesthesia drugs in their body, while another 80% stated that they breathed deeply into the anesthesia mask. However, a few (18%) experienced feeling suffocated while being anesthetized and 33% attempted to stay awake during induction, which is consistent with 29% trying to keep their eyes open. Half of the participants (50%) had no problem relinquishing control when being anesthetized, although 25% agreed that they tried to remain in control. Eye contact with the AP during induction was established by 68% of the participants and a clear majority (86%) succeeded in entering into a state of surrender, while 14% were reluctant to surrendering into anesthesia.

In order to eliminate items that were weak and/or too narrow, the ASI was further evaluated by means of corrected CITC (Study III). The analysis revealed that the reliability and validity of the ASI could be further improved in that all four dimensions showed discrepancies with items <0.3 and/or >0.7. One item (item 23; *I tried to stay awake*) was found to exceed >0.7 in the entire ASI, although not related to the subscale as such but only to the 18-49 year age group in the Control dimension.

The maximum score for the ASI was 108 points, where the md for the entire ASI was 85, which is equivalent to a response score of 78% from the maximum 108 points. Thus the Inter Quartile Range (ICQ) for the ASI obtained a score of 90.0 as the highest

value (q3) and 78.0 (q1) as the lowest. In terms of reliability the ASI showed a satisfactory α above 0.7 whilst the reliability on subscale level varied. Furthermore, reliability on item level also varied when related to gender and age groups.

Items with values <0.3 are presented below under each dimension heading.

Further Evaluation of the *Preparation by Avoidance* Dimension

Subscale

Item 9; *I prepared for postoperative discomfort.*

Gender

Item 9 (both men and women) and item 10; *I tried to ignore my emotions* (men).

Age Group

Item 9 (age group 18-49 years).

Complete

The α value for this subscale was 0.786 and the age groups and gender groups were all above 0.7. On item level, item 12*; I tried to avoid thoughts about what was happening to me,* and item 17; *I tried to avoid thoughts about the intraoperative environment*, gave the subscale an α of 0.698 and 0.680 when this item was deleted.

Floor and Ceiling Effects

The median (md) score for preparation by avoidance as a subscale was 19.0 out of a possible 28 points.

Further Evaluation of the *Control* Dimension

Subscale

Items 16; *I felt defenseless (Prior to induction)*, and item 26; *I felt I was being suffocated.*

Gender

Item 13; *I was afraid of not regaining consciousness*, (men), item 14; *I was afraid of waking up during surgery*, (men), item 16 (men and women), item 23; *I tried to stay awake* (men), and item 26 (men and women).

Age Group

Item 13 (50-83 year age group), item 14 (18-49 year agegroup), item 16 (both age groups), item 23 (50-83 year age group) and item 26 (both age groups).

Complete

The α for control as a subscale measured 0.637, exceeding 0.7 for the 18-49 year age group, but otherwise ranging between 0.680 (total α for women in this subscale) and 0.496 (total α for men in this subscale). On item-level, items 14, 16, and 26 gave the subscale an α above 0.7 among participants in the 18-49 year age group. Thus, the alpha values for control in this dimension ranged between 0.449 and 0.689 when both age and gender groups are considered.

Floor and Ceiling Effects

The md for control was 25.0 out of a possible 28 points.

Further Evaluation of the *Preparation by Understanding* Dimension

Subscale

Item 1; *I tried to envision the anesthesia.*

Gender

Item 1 (men).

Age Group

Item 1 (50-83 year age group) and item 7; *I tried to joke*, (18-49 year age group).

Complete

Preparation by understanding had an α of 0.734 and remained above 0.7 in all groups (age and gender). Overall, the α for the subscale ranged between 0.632 and 0.689 when both age and gender groups are considered.

Floor and Ceiling Effects

The md score for preparation by understanding was 20.0 out of a possible 28 points.

Further Evaluation of the *Acceptance* Dimension

Subscale

Item 8; *I followed the AP's instructions*, item 19; *I felt defenceless (at induction)*, and item 28; *I made eye contact with the AP*.

Gender

Item 6; *I experienced being personally received by the AP*, (women), item 8 (men and women), item 19 (men and women), item 27; *I breathed deeply into the anaesthesia mask* (women), item 28 (women) and item 29; *I felt that I could surrender* (men).

Age Group

Item 6 (50-83 year age group), item 8 (both age groups), item 19 (both age groups) and item 28 (18-49 year age group).

Complete

Acceptance measured 0.5 in terms of reliability, in addition to measuring 0.476 in the 18-49 year age group and 0.528 in the 50-83 year age group. In the gender groups the subscale had an α of 0.543 among men and 0.480 among women. None of the items in this subscale yielded a satisfactory reliability value of 0.7 or above. The lowest α for the subscale was 0.327 when item 29; *I felt that I could surrender*, was deleted in the age group of women. The highest α for the subscale was 0.545 when item 8 was deleted in the age-group of men.

Floor and Ceiling Effects

The median score for *Acceptance* was 21.0 out of a possible 24 points.

Following the findings of Study I, II and III, the ASI now consists of 22 items. The remaining 22 items are highlighted in bold style in Box 1.

1 I tried to envision the anesthesia
2 I looked around the operating theatre
3 I tried to understand the technical objects
4 I observed the work of the AP
5 I tried to pose as many questions as possible to the AP
6 I experienced being personally received by the AP
7 I tried to joke
8 I followed the AP's instructions
9 I prepared for postoperative discomfort
10 I tried to ignore my emotions
11 I tried to control my emotions
12 I tried to avoid thoughts about what was happening to me
13 I was afraid of not regaining consciousness
14 I was afraid of waking up during the surgery
15 I tried to understand what was taking place around me
16 I felt defenseless (Prior to Induction)
17 I tried to avoid thoughts about the intraoperative environment
18 I tried to avoid thoughts about the anesthesia induction
19 I felt defenseless (At induction)
20 I tried to avoid thoughts about what I sensed inside my body
21 I tried to understand the course of events I sensed inside my body†
22 I tried to relax†
23 I tried to stay awake
24 I tried to maintain control
25 I tried to keep my eyes open
26 I felt I was being suffocated
27 I breathed deeply into the anesthesia mask
28 I made eye contact with the AP
29 I felt that I could surrender

Box 1. Overview of the 29 Items in the ASI prior to further item reduction in Study III. The 22 retained items in Study III are highlighted in bold style. Items 21 and 22 were excluded prior to analysis.

† Despite that two of the items in the questionnaire, item 21 (I tried to understand the course of events I sensed inside my body) and item 22 (I tried to relax), had a dimensional loading value of 0.55 and 0.44 in the previous study (Study II), their theoretical interpretation remained unclear in terms of componential bearing. Consequently, in Study III items 21 and 22 were excluded from the ASI resulting in a total of 27 items for analysis.

Exploring the Dimensions of Recognition (Study IV)

Categories have been previously developed from a grounded theory on recognition in the caring encounter within the anesthesia context.[58] Subsequently, empirical exploration and measurement of the concept of recognition revealed three dimensions underpinning recognition in the context of anesthesia induction. The principal component analysis led to the retention of the following dimensions:

- Creating a caring relationship
- Working with the technology
- Establishing trust.

Item condensation resulted in a 28-item matrix where dimension I explained 17.2% of the variance, dimension II 10.6%, and dimension III 6.1%. The three-dimensional solution explained 34% of the variance in the matrix. Seven items were retained in both dimension II and diemension III. In dimension I 14 items clustered above 0.4. The PCA resulted in four items being excluded from the instrument due to a dimension loading value below 0.4.

Exploring the *Creating a Caring Relationship* Dimension

The 14 items comprising this dimension resulted in an λ of 5.5 after rotation, indicating greater explanatory power. The items underpinning the dimension are strategies for creating a caring relationship in the anesthesia context while the patient is still conscious and include:

- Mediating compassion through touch
- Promoting the patient's well-being prior to induction by ensuring that she/he understands that the AP will be there throughout the anesthesia process
- [prior to induction] Informing the patient that the induction is about to commence,
- Identifying with the patient by being attentive to her/his body language
- Mediating tranquility by lowering the sound level in the operating theatre
- Mediating compassion by eye contact
- Promoting the patient's well-being prior to induction by interacting with her/him
- Identifying with the patient by listening to her/him
- Handling one's medical responsibility during induction by being prepared for the unexpected
- Mediating tranquility by dimming the light in the operating theatre
- Recognizing the patient as a person by allowing her/him to participate during induction

- Recognizing the patient as a person by considering the commencement of induction as a joint decision
- Recognizing the patient as a person by respecting her/his right to self- determination
- Focusing on the patient during induction.

Exploring the *Working with the Technology* Dimension

This dimension had an λ of 3.4 and outlines the APs' strategies for working with the technology, revealing focused nursing in which interaction is restricted and control sought:

- Limited interaction with the patient is appropriate because analgesics or hypnotics better alleviate her/his anxiety
- Limited interaction with the patient is appropriate because it helps to sustain my concentration
- Limited interaction with the patient is appropriate because she/he knows best how to handle the emotions associated with induction
- Limited interaction with the patient is appropriate because my main task is to administer anesthesia
- My sense of control during induction requires that the patient is composed
- My sense of control during induction requires that I am composed
- My sense of control during induction requires that I can manage the patien.

Exploring the *Establishing Trust* Dimension

This dimension had an λ of 1.9 and represented the third phase of the caring encounter prior to induction. Here, the APs used their technological knowledge and skills as strategies for establishing trust in the patient. It also included communication and the perspective on how the APs viewed their professional self-image during the process. In establishing trust the AP:

- Handles the responsibility for drug management by affirming her/his pharmacological knowledge
- Handles the medical responsibility during induction by affirming her/his medical technical knowledge
- [during induction] Directs her/his attention towards the medical technical monitoring variables
- Considers that her/his professional self-image is mainly affected by the recognition she/he receive from the patient
- Handles the responsibility for drug management by informing the patient about the effects of the anesthesia drugs during induction

- Considers that her/his professional self-image is mainly affected by the recognition she/he receives from colleagues
- Communicates to the anesthesiologist that all is ready and induction can commenc.

Demography and Item Response Frequency

Out of the 185 participants 70% (n=129) had completed their anesthesia nursing education prior to 2007 while 44% had done advanced level thesis work. The vast majority (92%) were content with their current employer and 87% were satisfied with how anesthesia nursing was implemented where they worked. Only 1% considered that they did not provide good anesthesia nursing, although 26% considered that the preconditions under which they worked were inadequate for enabling them to provide the anesthesia nursing they wished to give their patients. When asked about their professional self-image, 58% indicated that it was affected by recognition from their employer. Another 88% considered that recognition from their colleagues affected their professional self-image, while 89% expressed that the recognition they received from the patient affected their professional self-image.

Prior to induction, all of the participants informed the patient that the induction was about to commence. Compassion towards the patient was mediated via eye-contact by 96.5% of the participating APs, while compassion through touch was mediated by 95.5%. To promote patient well-being prior to induction, 95.5% ensured that the patient understood that the anesthesia process follows a plan. In addition, 98% assumed their responsibility for drug management by informing the patient about the effects of the anesthesia drugs during induction, e.g., dizziness.

Recognizing the patient as a person by viewing the commencement of induction as a joint decision was reported by 84% of the participants. Likewise, 89 % allowed the patient to participate during induction as a way of recognizing her/him as a person. In contrast, 28% of the participating APs believed that limited interaction with the patient is appropriate because she/he knows best how to handle emotions associated with the induction. More than half (54%) thought that analgesics or hypnotics could better alleviate the patient's anxiety, making limited interaction with the patient appropriate. Another 40% viewed limited interaction with the patient as appropriate because their main task is to administer anesthesia, while 20.5% considered it appropriate to maintain their concentration during induction. Furthermore, 52% of the nurse anesthetists also directed their attention towards the operating theatre staff while anesthesia induction was taking place. The nurse anesthetists' sense of control during induction was related to composure and management, where 21% considered a composed patient a requirement for control. In contrast, 93.5% associated their own composure during induction with control. For 91%, control during induction required the feeling of being able to handle the patient.

Discussion

Methodological Considerations

There is an inherent problem with pioneering new fields of research. First, the new theoretical foundation of surrendering and recognition in anesthesia care represents territory not previously explored in the caring sciences, which implies that it had to be problematized and defined. In addition, the process of working with an inductive methodological stance and changing to a deductive one with newly developed concepts and further theorization, could be considered a vast venture. Second, it entails practical limitations, such as trying to give each manuscript enough scientific weight.
For example, what do you do when the references are not sufficiently up to date or non-existent because of no, or limited, previous research in the field? Not exploring new fields, because of this, would most likely mean letting the knowledge about human experiences stagnate. For me, it meant continuing to go forward, no matter how many times a manuscript was questioned and/or rejected, in the knowledge that I am one of only a few who have explored something not previously researched.

Rigour

The inductive Study I in this thesis followed Charmaz's[6] evaluation criteria for rigour in constructivist grounded theory studies. Credibility was achieved through the inclusion of elucidative, descriptive quotations reflecting each of the main categories of the grounded theory. The use of quotations also helped to generate familiarity with the specific category in addition to how the quotation relates to the category.[6] The number and depth of explanations (e.g., how the participant chose to relate and describe a specific situation, emotion or thought) ensured saturation and enabled us to identify a pattern in the analysis (i.e., a set of sufficiently interconnected quotations for a category to be conceptualized). However, credibility could have been affected by the choice of quotations used in the findings and the size of the samples. On the other hand, credibility is in the eye of the beholder because the evidence presented in Study I will ultimately be assessed and judged by the individual reader.

The originality[6] of Study I is evident in the fact that it is situated in the context of the caring encounter between the AP and the patient, describing their interaction prior to anesthesia induction. As a result, the significance of Study I comprise:

- Social significance[6]; where the grounded theory explain the basic social process in the caring encounter prior to induction from the perspective of the patient
- Theoretical significance[6]; where the grounded theory itself is a representation of theory development and the development of one unique hypothesis, i.e. constructing a foundation for surrendering one's life into the hands of the other (Study I).

Therefore, the grounded theory on surrendering (Study I) provide a new concept in anesthesia care and extend current knowledge of how the patient experience the perianesthesia phase up to induction.

Resonance[6] in the participants' experiences is illustrated in the categories and related quotations. However, it is difficult to say whether the categories in each grounded theory fully portray the experiences of the participants. Analyzing data from interviews with 100 or 1000 participants might, or might not, have influenced the resonance differently. Replication of the grounded theory study with a larger number of participants, in addition to researchers with a background in anesthesia is therefore needed to strengthen the resonance of the findings. However, to determine whether the grounded theory in Study I made any sense, two participants were asked to read and evaluate the findings. Both stated that they recognized themselves in the findings, indicating a shared meaning.

In terms of usefulness[6], Study I increase awareness of the anesthesia induction experience among APs and the general public. More specifically, the findings could enable self-awareness among students in anesthesia, as well as providing practicing nurse anesthetists and anesthesiologists with knowledge about the social process in the caring encounter in the intraoperative phase. Furthermore, the moral obligation towards the patient in anesthesia care is apparent, thus the concepts of surrendering and recognition prior to induction could be used in ethical tuition in anesthesia. Because the caring encounter is part of care in general, the findings could be generalized to other areas within the healthcare organization, for example, accident and emergency and/or perinatal care.

Reliability and Construct Validity (Studies II, III, and IV)

Like all psychosocial-interactive instruments, the two instruments developed and used in Studies II, III, and IV; the Anesthesia Surrendering Instrument (ASI) (Studie II and

Study III) and the Recognition Ability in Anesthesia Care Instrument (Study IV), are subject to measurement error.[4] Hence, the reliability of the instruments is subject to two kinds of error: systematic and random.

Overall, both instruments seem to capture the phenomena for which they were developed. In order to measure and assess the internal consistency among the items in each instrument, Chronbach's alpha (α) coefficient was used to determine the reliability of the instruments in Studies II, III, and IV. The advantage of using α measurement is that it represents an average of all possible reliability coefficients obtained from the items in the instrument.[4, 108] Given the early stage of research and because the instruments are newly developed, we argue in line with Nunnally and Bernstein[112] that a cut-off α-value of 0.7 should not be deemed an absolute threshold of reliability as it is a rather cautious rule for guidance in instrument development.[4, 112] However, to avoid systematic errors, e.g., repeatedly using uncalibrated statements in the instrument, statements related to dimensions with an α-value below 0.7 should be further investigated, refined or excluded before the next round of research.

For further use and future development, it is necessary to strengthen the reliability of dimension number four (Acceptance) in the ASI (Studies II and III) because of the weak α-value of 0.57 (Study II) and 0.5 (Study III). Statements used in this dimension were: *I felt that I could surrender*, *I made eye contact with the AP*, *I followed the AP's instructions*, *I experienced being personally received by the AP*, *I breathed deeply into the anesthesia mask*, and *I felt defenceless*. At the same time, refinement of dimension one (Preparation by avoidance), two (Control), and three (Preparation by understanding) (αrange 0.74-0.81 in Study II) might be unnecessary because an α-value close to 1.0 could be an indication that the items within the dimension are identical as they might test the same aspect but in a different form, thus failing to capture the width and essence of the construct.[113, 114] Therefore, the overall α-value (0.76) of the ASI should be positively affected by the measurements in dimension four suggested above.

The α-value changed when each dimension (F1 to F4) or a specific item were related to particular age and gender groups. In Study III, the total α-value for the ASI was 0.733 while all α-value on item level in F1 was stable when a specific item was deleted, ranging from 0.680 to 0.832. In F2, the α-value for the subscale improved (> 0.7) when two items were deleted in the 18-49 year age group and when deleted in the 18-49 year age group and for women. The α-value in F4 remained below 0.7, which was also the case in the Study II, thus requiring further development. However, weak α -values do not automatically mean that the reliability is inconsistent but merely highlight the importance of further assessment of the number of items and the homogeneity of each factor (Lance, Charles, & Butts, 2006).[115]

In Study IV, the phenomena of recognition were more complex and difficult to measure, which is also reflected in the overall α-value (0.71) of the instrument. Although two of the three dimensions (Creating a caring relationship and Working

with the technology) have an α above 0.7, the third dimension (Establishing trust) only has 0.65, which again indicates a low correlation among the items it contains. Further investigation and refinement of the items in dimension three would be necessary to increase the construct specific α and consequently the overall reliability of the instrument.[4, 113]

The Correlation Matrix

Holgado et al.[116] states that the most common used technique for studying construct validity is Pearson correlation matrices in order to obtain dimensions. This, eventhough the variables might be ordered instead of continuous. However, Holgade et al.[116] argues that Pearson correlations are best suited for interval measurement scales where the distance is always equal between the points in the scale. Accordingly, using Pearson correlations when running psychometric tests such as facor analysis or PCA would risk to restrict the items movement (to and from) the various dimenison in the matrix. Why? Because of the limitation the interval imposes on the items during the analysis. Thus, items might end up with having the same, or near enough the same, score that consequently affect the loading of the dimension (and the matrix). In short, using Pearson correlation on ordered data might reduce data variability, why the factor loadings in Paper II and IV and CITC values in Paper III might be considered to low (because of the reduced variability).[116]

In retrospect, and in line with Holgado et al.[116] and Streiner et al.[100], using a polychoric correlation technique (non-interval) would have been more apropriate in terms of accuracy. Though, (SPSS) the Statistical Package for the Social Science doesn't have a built in procedure for this technique and would require an extension package for this type of analysis.

Scale

Deciding not to develop an odd-point scale was made with the intention of avoiding a "no-opinion" choice that, in addition, would risk to reflect what could be/or not be an average or typical score for the participant.[100] On the other hand, by not having a neutral option other aspects of importance to the instrument would risk to be overlooked. For instance, the participant might want to leave an answer but choose not to because she/he thinks that the statement does not apply to the research problem. Or, that the participant have difficulties in making up her/his mind or simply doesn't understand the question.[100]

Recall Bias

There are several possible errors or aspects of bias that might have affected the studies in this thesis. In line with Norris[117], there could be a risk that potential (or included)

participants were affected by the time and place of the request to participate in the study. A limited time to make up one's mind about participation as well as having to do so in unfamiliar surroundings (preoperative clinic/surgical daycare unit) could have influenced the participants' decision.

My interview skills and affinity with the narratives certain kinds of interviewee could have had an impact on the data collection and analysis.[117] Participants who reacted emotionally (becoming upset or crying) when describing various life events (e.g., a death within the family) or when asked to reflect or elaborate on their induction experience, affected my willingness to proceed with questions that might have triggered their emotional reaction. Uncertainty about how to handle a possible worsening of the participants' reaction made me decide to avoid the specific question, hence information that might have contributed to the data could be missing. In addition, my capacity for concentration and patience in the entire methodological research process is mirrored in the summary of Study I in this thesis.[117]

Discussion of the Findings

This thesis contributes an in-depth understanding and exploration of two essential phenomena within the context of peri-anesthesia nursing: surrendering and recognition. These phenomena were identified as concepts in Study I as well as a previous grounded theory study on recognition by Liebenhagen & Forsberg[58] , because of their relation to other categories.[6] When continuing with a psychometric exploration of surrendering and recognition, further abstraction was necessary to develop the various dimensions underpinning each construct, i.e., allowing them to be defined as interpretations of a situation (e.g., surrendering to anesthesia) that formed the basis upon which the anesthesia experience was understood.[7]

Although the two constructs are interrelated and interwoven, they can also be positioned in an ethical loop within the perioperative context in general and the perianesthesia context in particular. Furthermore, both constructs can be positioned in a form of we-space communication and thus be related to perioperative advocacy[1] (Figure 4) in addition to the six core nursing competencies as described in the Quality and Safety Education for Nurses (QSEN)[118] (Figure 5). In addition, for me, and in accordance with Gunnlaugson and Moze[62], the concepts of trust and curiosity are key features of the "we-space communication" embodied by the interpersonal dynamics in anesthesia care and therefore underpin the above aspects in the ethical loop as described in Figure 4.

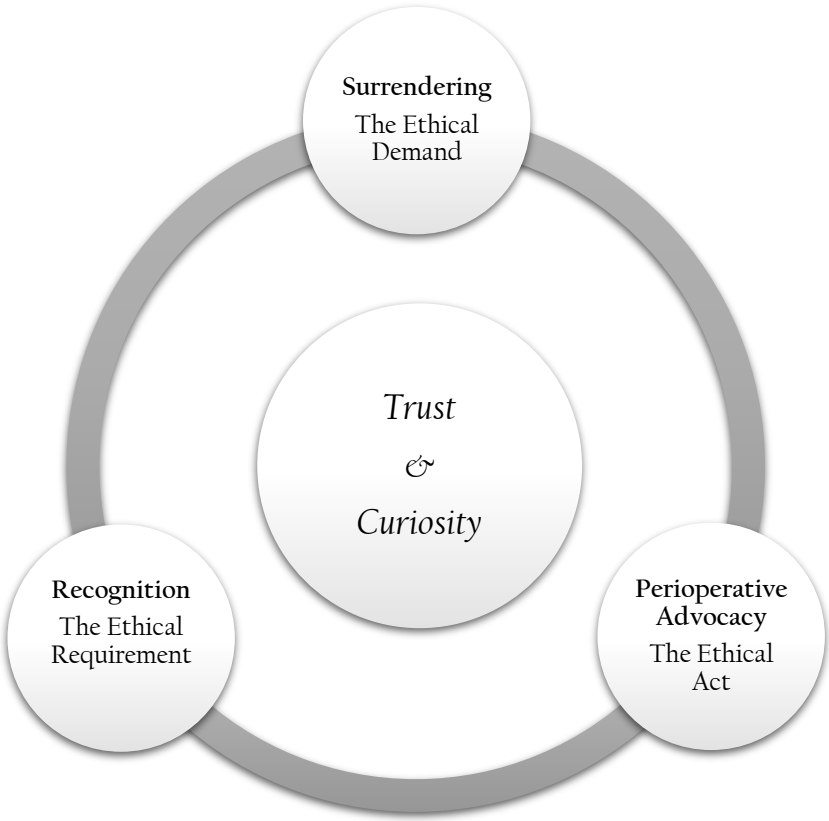

Figure 4. An Illustration of a Possible Ethical Loop, Comprising the Constructs of Recognition, Surrendering and the Act of Advocacy in the Interpersonal Dynamic in Anesthesia Care.
Trust and curiosity are placed at the center of the loop because of their influence on the three features in the loop.

The overall understanding is that the moral belief in the anesthesia setting concerns recognition of the vulnerable human being who must surrender into the hands of the AP. This surrendering places an ethical demand on the AP, where recognition serves as a mediator of perioperative advocacy defined by Sundqvist[1] as *doing good for another human being - a balancing act between philanthropy and personal gratification.* Placing perioperative advocacy as an ethical act in relation to the constructs of recognition and surrendering implies that certain specific features are needed in the interpersonal dynamics between the patient and the AP. If perioperative advocacy is understood as safeguarding and speaking on the behalf of the patient, it follows that the AP is obliged to act accordingly.[119] Verbal (e.g., reassurance) and non-verbal (e.g., eye-contact)

communication enable the patient to develop sufficient confidence in the AP's ability to care for her/him while under the influence of anestheisa.[59, 120] As communication requires presence and attentiveness in order to respond there appears to be a common denominator, a concept, that permeates the constructs of recognition and surrendering as well as advocacy.

Acting as the patient's advocate requires verbal and non-verbal interaction whereby the patient can be informed, reassured, and consoled by the knowledge that she/he will be given a voice by the AP whilst anesthetized.[119] Hence, trust in the AP is gained once the patient realizes that the AP acts as her/his caring alter ego.[59, 119] According to Levinas[121], recognition of the other (here; the patient's struggle to surrender) is an act that inspires trust.[58] Thus, recognition becomes an ethical requirement for establishing solidarity, unanimity, and maintaining the patient's dignity.[11, 58] Lastly, it is essential for the AP to employ an approach by which the patient perceives that she/he is worthy of trust, as that will enable the patient to surrender.[59]

The constructs of recognition and surrendering can be understood as a prerequisite for perioperative advocacy that in turn could serve as a foundation for the core nursing competencies as proposed and defined by the Quality and Safety Education for Nurses (QSEN).[118] The core nursing competencies are; person-centered care, safety, quality improvement, teamwork and collaboration, informatics, and evidence-based practice, all of which outline the meaning of being a competent and respected nurse.[118]

According to QSEN,[118] a *person-centered care* approach means that the AP values the patients as partners in care. This approach incorporates shared decision-making, an invitation to the patient that eliminates barriers due to self-interest, instead facilitating patient advocacy and a safe transition in anesthesia care. With regard to *evidence-based practice*, students in anesthesia and active APs would understand that it not only involves scientific evidence and clinical opinions, but also takes account of patient preferences and values.[118] Taking account of the patient's preferences could therefore involve an understanding of when it might be appropriate to deviate from evidence-based guidelines in order to provide patient-centered care. For example, it is not necessary for the AP to hold the anesthesia mask tightly over the patient's nose and mouth during induction if there is no clear medical or life sustaining reason to do so and if the patient experiences discomfort from the anesthesia mask.

Team work and collaboration is a competency in which operating theatre staff members understand the significance of well-functioning communication within the team and interprofessionaly.[118] Knowledge about different communication styles on the part of the AP would help to improve team work as well as the relationship with the patient and her/his development of trust in the AP.[118, 119] *Quality improvement* in anesthesia care includes comprehending that quality care is achieved by collaboration between various health professions (e.g., anesthesiologists, nurse anesthetists and assistant nurses),[118] knowing how to seek information about quality improvement projects, in

addition to understanding and appreciating the fact that continuous learning nurtures quality improvement and is an essential part of the daily work of the AP and operating theatre staff.[118] In terms of *safety* as a core nursing competence, it is of importance for anesthesia students and APs to be able to make effective use of the technology (e.g., anesthesia delivery unit and infusion pumps) associated with anesthesia care, thus promoting safe patient care and reducing the risk of harm to the patient, in accordance with safeguarding in patient advocacy.[118, 119] Due to the use of information technology, *informatics* as a competency is of importance in that it can support patient care.[118] Medical records might contain information of importance for the AP about a patient's mental status. As a result, the AP can decide in advance how best to deal with an extremely anxious patient. This could support clinical decision-making, whereby information management programs are tools for monitoring the outcome of the anesthesia care process.[118]

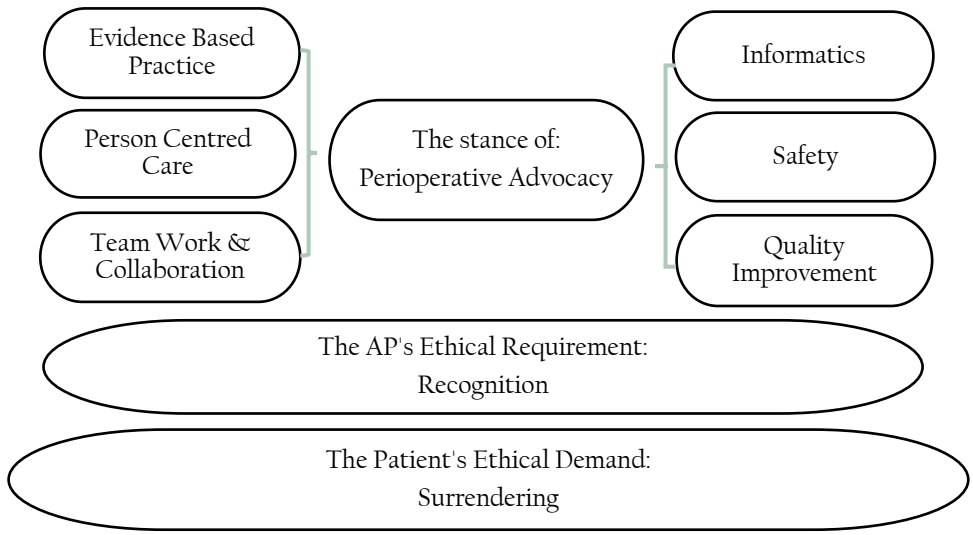

Figure 5. Positioning the Comprehensive Understanding of Surrendering and Recognition as Pillars of Anesthesia Care, Supporting the Stance of Perioperative Advocacy Incorporating Six Nursing Competencies; Person-Centered Care, Evidence-Based Practice, Safety, Team Work and Collaboration, Informatics, and Quality Improvement.

Understanding Surrendering in Anesthesia Care

The findings on surrendering in Studies I, II, and III were based on samples comprising a majority of women (I=59%, II=56%, and III=61%). To what extent gender could have an impact on the ability to generate trust in the AP and surrender to anesthesia is highly speculative. However, studies on patients undergoing day-care surgery with GA have shown that women experienced preoperative anxiety to a greater degree than men.[122] No attempts were made to differentiate between the surrendering experience of women and men in Studies I or II. However, in the grounded theory study (Study I), we found male participants to be more interested in observing the effect of the drugs on the body (e.g., "it almost became like a game, sensing how it wandered…"), while female participants more emotionally engaged (e.g., "I tried to reflect. To distance myself"). Consequently, we opted for a gender comparison in Study III where further assessment of the internal consistency of the instrument comprised differentiating between men's and women's surrendering to anesthesia, which was highlighted in the CITC analysis (identification of inconsistencies in the items) at the same time as the variation of the αwhen a specific item was deleted from the ASI (i.e., if the reliability of the ASI was strenghtened or weakened when an item was deleted).

Regarding the inductive findings of Study I, we noted that men showed more interest in the technical aspects of anesthesia (e.g., wondering about the anesthesia equipment), while women were more concerned about their emotional state and bodily integrity. As to the interest in the technical equipment in operating theatres, Study II revealed that 80% wanted to understand the environment by looking around the operating theatre. Additionally, 50% tried to understand the technical equipment while 83% observed the work of the AP. Could this curiosity amongst the participants to come to grips with the unfamiliar (environment, technical equipment and the work of the AP) be a component of generating trust in order to surrender?

By requiring the patient to trust in the AP the latter takes on a role of power and control. Hence, 90% in Study II completely agreed that they followed the AP's instructions during induction and 83% breathed deeply into the anesthesia mask. Although the intent behind the demand might be benevolent and well-meaning, the patient is restricted in her/his struggle to surrender into the hands of the AP. Instead, the process of surrendering is built on faith (e.g., survival), hope (e.g., cure), trust (e.g., being in safe hands), and meaning (e.g., it will be worth the effort to be rendered unconscious by an unknown other). Thus, surrendering in anesthesia care is an act and a way of functioning whereby the patient can achieve a state of surrender where she/he rests assured by the AP's promise of professional competence and advocacy. Moze[123] describes it as an active and intimate state in that surrender reacquaints us with our innocence and humanness as opposed to individuality.

My interpretation is that the innocence is mirrored in the patient's exposure and vulnerability in the anesthesia context, whilst humanness is the ability to lean on (i.e., trust in) the unknown other (the AP) on whom the patient relies. For the patient, the AP becomes the unknown materialized, a face that will close, sustain and resurrect her/his consciousness once the diagnostic procedure or surgery is finished. Furthermore, the AP embodies the culture of the healthcare organization with specific knowledge, norms, and opinions that the patient might interpret as threatening to her/his right to autonomy, integrity, and self-preservation. Here, 52% indicated that tried to avoid thoughts about what was happening to them, whilst 58% attempted to control their emotions (Study II). Hence, the struggle to surrender is, as shown in Study I, a basic social process because, in accordance with Moze[123], it demands a dynamic relationship with and meaning making in the presence of the the AP. Meaning making could explain why 52% completely agreed with the statement that they felt like an important person while in the care of the AP (Study II). Then again, choosing individuality could be interpreted as trying to retain control and not surrendering, which could apply to the 22% of participants who did not want to be under the influence of sedatives at induction (Study II). On the other hand, another 22% indicated that they felt defenseless at the time of induction. Therefore, could the absence of sedatives in connection with GA be less beneficial for the patient's surrendering process and, from an ethical point of view, challenging with regard to their impact on the patient's lucidity and autonomy?

The patient's surrendering process can be viewed as transformative in that it initially entails the dilemma of remaining in control, while at the same time being aware of the necessity of the anesthesia, i.e., only through a pharmacologically induced state of unconsciousness is a cure by surgical intervention possible. Throughout the process, the patient reevaluates her/his beliefs and previous experiences (self-examination), modifying or reconfirming them so that her/his knowledge is enhanced. Over time, this knowledge is integrated into a 'new' way of relating to reality and exploring options for new plans or roles. However, transformation from one state of being to another requires the courage to enable the act of surrendering.[123] Furthermore, surrendering is a healthy act and transformative process characterized by a wish to know the other, i.e. can the AP be trusted?, and a desire to be known by the AP, i.e. the AP's recognition of the patient's surrender.[123] The experience of surrender takes place within oneself and is equivalent to a sense of liberation and a willingness to let go of defensive barriers and resistance.[123] In surrendering, the patient has achieved an acceptance of the AP and of letting go of her/his self-preservation and conscious awareness. The patient rests in the notion that her/his surrender is a temporary abandonment of bodily control and suspension of awareness.[123] Additionally, the surrendering experience brings about an increased sense of reliance along with positive feelings and inner peace.[62]

In accordance with Gunnlaugson and Moze,[62, 123] it should be clarified that the patient's surrendering in anesthesia care is not equivalent to:

- *Submission*, where the AP dominates the patient because submission encompasses a sense distrust and betrayal with a desire for eventual revenge[123]
- *Resignation*, arising from judgement and as a consequence of strenuous and failed efforts to reach a mutual understanding or decision in the interpersonal relationship, i.e., between the patient and the AP[123]
- *Compliance*, where the patient goes along with the procedures for the sake of the AP rather than her/his own convictions, generating a sense of inferiority and/or guilt for not standing up for oneself.[123] Moreover, compliance is in accordance with what Wolff[12] calls a false surrender, where the patient loses her/his self-identity by not standing up for her/himself.

Gunnlaugson and Moze[62] argue that there are conditions that enable the surrendering experience. For the patient who is about to undergo GA the first condition is the development of trust, something that can be reinforced by means of a 'we-space communication' when interacting with the patient at the operating theatre.[62] In the course of this interaction 68% of the participants made eye contact with the AP and another 46% felt that they could facilitate the AP's work. This can create an environment of mutuality whereby the patient and the AP agree upon the time for induction, instead of the AP overriding the patient's concerns.[62] This might explain why 52% completely agreed that they could let go and surrender to anesthesia (Study II).

From a clinical perspective, I interpret this to mean that trust generated through we-space communication not only results in mutuality but also fosters a natural curiosity within the patient which, according to Gunnlaugson and Moze[62], is a third condition for surrendering.[62] The patient might find it easier to let go and relinquish control if she/he feels like an important person who is integrated in and part of a caring environment. Curiosity could trigger the patient to – temporarily - explore the unknown. Theoretically, in the process of concept and construct exploration, the ASI is an outstanding example of how to develop an instrument for this purpose in the sense that a concept was defined within the situational context followed by psychometrical testing, which established surrendering as a construct in anesthesia care. Hence, the exploration and instrumentation of surrendering to anesthesia is a new area in caring sciences, concerning the interdiciplinary field of anesthesia care, which is shared by nurse anesthetists and anesthesiologists in various countries. In light of the findings in Studies I, II, and III, the process from inductive to deductive research is clear in terms of sequentiality in the research process. From an educational point of view, it could be considered an example of how to develop and explore concepts in general and surrendering in the anesthesia context in particular.

Understanding Recognition in Anesthesia Care

I believe that the phenomenon of recognition is dependent on two major actors, namely the provider and the recipient; in the anesthesia context the AP and the patient. It is in the encounter that the two, the provider and the recipient, share the recognition of each other. This highlights the fact that as a phenomenon, recognition is more complex and challenging to study than phenomena that only exist in the experience of one actor. That is, it cannot be assumed that the patient and the AP experience surrendering at the time of anesthesia induction and that surrendering can only be interpreted in the sense of moving from point A to point B. Therefore, recognition has the characteristics of duality, as an isolated experience in one subject and as a reciprocal and shared experience between two subjects who recognize each other in the encounter. Hence, features of singularity and duality reveal the complexity of its characteristics. In the present context, the ability to recognize the other lies in the readiness of the AP to identify with the patient by listening to her/him, something that 85% of the participants in Study IV completely agreed with. Furthermore, perhaps it is only through identification with another that we can act or respond as a way of recognizing the other. Thus, 81% of the participants mediated compassion to the patient by means of eye-contact and promoted the patient's well-being prior to induction by ensuring that she/he understood that the anesthesia process follows a plan (58%) (IV).

In the anesthesia context, the cornerstones of the phenomenon are activated during the intraoperative encounter between the patient and the AP. One might argue that the patient encounters several other professionals from contiguous disciplines; e.g., the scrub-nurse or surgeon, and that this also represents an encounter in which the patient has be recognized to be able to surrender. However, the AP is the person who incorporates and represents the specific knowledge on how to induce and maintain safe anesthesia. Consequently, it is the encounter between the patient and the AP that is of significance when seeking to understand the AP's perspective on how the patient is recognized prior to induction. At the same time, recognition is also important for the AP because it enables her/him to develop a professional self-image. This is seen in Study IV, where 55% of the participating APs completely agreed with the statement that their professional self-image is mainly influenced by the recognition they receive from the patient. A total of 58% of the participating APs also agreed on the importance of being recognized by their employer for having their professional self-image strengthened.

It is my belief that the professional self-image is also related to the specific knowledge on how to administer anesthesia, which is restricted to nurse anesthetists and anesthesiologists, thus anesthesia care only can be assigned to specialized professionals in nursing and/or biomedicine. This was shown among 74% of the participants (IV) who handled their responsibility for drug management by informing the patient about the effects of the anesthesia drugs during induction. In addition, 76% completely agreed with the statement that prior to induction they communicate to the

anesthesiologist that all is ready and induction can commence. In view of that, and with regard to professional recognition, I wonder how the healthcare organization rates the importance of nurse anesthetists as APs and other healthcare professionals (e.g., registered general nurses) in view of the fact that nurse anesthetists have a higher degree of autonomy in their responsibility for the patient's life.

Because care represents a relational dynamic, it also involves negotiation over a social distance.[5] That is, when care is offered a distance has to be spanned by means of communication or imagination, i.e., the patient might have a preconception about what it is like to be anesthetized, resulting in hesitation to accept the care offered by the AP. Consequently, the AP requires a sufficient sense of control in order to recognize the patient's concerns and reassure her/him by communicating why the GA is of importance for the patient. Control possibly originates from theoretical knowledge, work experience, know-how, and professional self-image. Perhaps that is why 53% of the participating APs completely agreed with the statement that her/his sense of control during induction required that she/he could manage the patient, 21% thought that control required a composed patient and 93% felt that APs needed to be composed to feel in control at induction (IV). Thus, care becomes an ethical (the approach) and moral (the act) issue of how far the AP extends her/his care. Conceivably, APs who felt less in control were those (20%) who thought that limited interaction with the patient was appropriate because it helped to sustain the AP's concentration (IV) or because the AP's main task is to administer anesthesia (39%), thus there is less need to become engaged in interaction with the patient. Consequently, it might not be to far-fetched to assume that for some APs the strategy for achieving control involved restricting their interaction with the patient at the time of anesthesia induction. Furthermore, limited interaction with the patient helped the AP to concentrate, whereby analgesics and/or hypnotics were believed to better alleviate the patient's anxiety (53% agreed).

Taking the perspective of Conradson[5] as a point of departure, care in the anesthesia context reflects the AP's recognition of the patient's needs in addition to how the AP values the patient's experiences (e.g., previous anesthesia). Thus, the degree to which the AP values the patient's experiences corresponds with the extent to which she/he is genuinely concerned about the needs of the patient.[5] This requires an act of engagement (the interaction) and investment (the effort and time) by the AP, which was demonstrated among 40% (completely agree) of the participants who recognized the patient as a person by considering the commencement of induction as a joint decision and by 66% who respected the patient's right to self-determination (IV).

Understanding Care as Responsivity to Surrendering/Recognition

Care in anesthesia is responsivity that comprises the six features of Simone Roach's[124] perspective on care as a human mode of being; compassion, competence, confidence, conscience, commitment, and comportment. This could further facilitate our understanding of what the AP is doing when she/he is caring for the patient in the anesthesia context. More specifically, the attributes of caring can be identified in the performance of the AP.[124] Care in the anesthesia context could thus comprise:

- *Compassion*, because the AP must be present and willing to respond to the patient. Compassion becomes an attempt to understand the patient's ethical demand to surrender prior to induction by recognizing her/his expectations and/or fears.[124] Thus, compassion in anesthesia care might help the AP to recognize the patient's needs as well as helping the patient to better comprehend the situation.
- *Competence*, because the AP must have sufficient self-motivation in addition to the specific knowledge, skills, and judgment needed to respond in accordance with the responsibilities of the profession. Competence in care therefore represents a willingness to learn and to practice what has been learnt within anesthesia, i.e., to assess, plan and implement. Moreover, that practice is applied in a dignified manner that serves the needs of the patient so that she/he can surrender.[124]
- *Confidence,* because the AP must create a trusting relationship with the patient, which is vital for the development of both concepts (Figure 4.). This is achieved by truthful but non-violent communication, mediating respect without paternalism and avoiding the use of a language that evokes a response of fear and/or feeling of powerlessness, e.g., medical terminology. This represents holistic care with a sensitivity to ethics.[124]
- *Conscience,* because the AP must confront the patient in the same way as the AP would confront her/himself in the same situation. This represents moral sensitivity where the AP's moral obligation becomes personalized. It incorporates an understanding of the patient's rights and the need to advocate for the patient during the entire anesthesia period.[124]
- *Commitment* requires the AP to deliberately choose to act in accordance with her/his professional obligations. This means ensuring that the patient understands that the AP will be there for her/him during the entire anesthesia process and that anesthesia care is administered without 'cutting corners'.[124]
- *Comportment* requires the AP to choose an attitude toward the patient and employ words that are appropriate in the situation. Hence, comportment is manifested by symbolism and reveals one's bearing in the AP-patient interaction.[124] For example, avoiding eye-contact with the patient might signal indifference, despite the fact that the AP is working with the technology. So, conducting oneself as the professional one professes to be could involve showing respect to the patient first as the main priority and placing the the technical procedure in second place.[124]

I argue that each of the "Six Cs" in Roach's[124] perspective on care requires the presence of a self-motivated professional who is morally obliged to confront the patient employing a language and approach that enable the patient to surrender to anesthesia. This is in accordance with Honneth's[11] reasoning on recognition, which implies that once the other can see her-/himself in another trust can develop in the sense that "*the other is there for me*".

Conclusion

This thesis shows that the patient's main concern revolves around the central issue of surrendering oneself as part of the basic social process of care that she/he undergoes prior to anesthesia induction. It is possible to operationalize the construct of surrendering based on four dimensions. Because of this, surrendering can be viewed as a theoretical framework expressed as a process of preparation by avoidance, control, preparation by understanding, and acceptance. Placing one's life in the hands of the AP involves constructing a foundation of trust in the AP and that the patient perceives that she/he can let go of bodily integrity and autonomy in a dignified manner. In turn, the AP can best facilitate surrendering by means of acknowledgement, both verbally and through eye-contact, presence, and by understanding the patient's loss of control by mediating recognition.

Being able to recognize or receive recognition requires the presence of at least two subjects, here the patient and the AP. To avoid mediating a false façade of care and repudiation of the patient, the AP is obliged to engage in the moral act of recognition where she/he is attentive to the patient's concerns rather than immersed in matters of self-interest. Recognition is a dualistic and measurable construct based on the dimensions of creating a trusting relationship, working with the technology, and establishing trust. The AP's mediation of recognition creates an environment that can facilitate co-operation and trust, thus supporting the patient's surrender to anesthesia. Due to its complexity and dependence on interpersonal dynamics, further research on recognition is needed in order to strengthen the construct and its dimensions in relation to anesthesia care.

Clinical Implications

The clinical implications of the findings in this thesis are; (1) that the individual conduct of the AP is of importance in the caring encounter with the patient prior to anesthesia induction, (2) that the AP's actions and attitudes towards the patient can be further enhanced by raising awareness of how the social process in the anesthesia context unfolds from a patient perspective, leading to continuous professional growth and adherence to the need for interaction in anesthesia care, and (3) the necessity of ensuring that the patient senses that she/he is in a protected environment, safe from harm, and has an opportunity to participate in the anesthesia preparations, thus strengthening patient autonomy.

It is possible to further develop the tentative version of the ASI into a self-administered instrument for measuring patient experiences that can be used by APs to evaluate patient satisfaction with the ability to surrender in anesthesia induction. The results can enable hospital management to promote the prerequisites for APs to create care based on trust, leading to an optimal patient experience. The AP's clinical prerequisites in terms of work pace and time constraints are significant her/his obligation to assume ethical responsibility by recognizing the patient's struggle for a dignified surrender.

The theoretical insight into what constitutes recognition also sheds light on the importance of the AP's professionalism being recognized by the healthcare organization and her/his colleagues. This is of significance for developing and maintaining a strong professional self-image, as well as strengthening the AP's role within the healthcare organization. Perhaps inter-professional dialogues that encompass the above-mentioned aspects of surrendering and the dual aspects of recognition could generate an increased sense of responsibility for patient care as well as fostering a discussion on how to best promote anesthesia as a nursing and medical profession within the healthcare organization in order to ensure professional recognition. Furthermore, the theory and knowledge about the importance of surrendering and recognition in anesthesia care could also be used during anesthesia training. For instance, the dimensions of surrendering and recognition could serve as areas of reflection for students and licensed healthcare professionals in anesthesia care.

To become a patient advocate in anesthesia care, the AP is morally obliged to deliver dignified and safe care to the patient. Recognition of the patient's struggle to surrender involves empathic skills through which the AP defends the patient's rights and creates

trust in the encounter, thus recognizing the patient's needs and safeguarding her/him. Hence, in line with Koenig et al.[125], university admission committees might benefit patient care by examining medical and nursing applicants' objectives before admitting them to the health care program, e.g. the interviews should shed light on the applicants' ethical responsibility to self and others. Being aware of how her/his own professional social process unfolds in the presence of the patient can help the AP to recognize the patient as a vulnerable person trying to surrender into anesthesia and her/his own responsibility as an AP.

Further Research

Surrendering

Because surrendering to anesthesia is a construct with four dimensions, it would be of interest to explore the lived experience thereof using phenomenology. How does the patient explain the meaning of surrendering in contrast to the basic social process generated in Study I? Future research can look more deeply into the phenomenon of surrendering by trying to confirm the findings in Study II through confirmatory factor analysis. This would help to assess the extent to which the hypothesized measurement model fits the data, in addition to testing the utility of the underlying dimensions (preparation by avoidance, control, preparation by understanding, and acceptance) of surrendering.

Using the findings in the grounded theory of Study I as a starting point, further exploration of s can help to illuminate other perspectives from which surrendering is experienced. The most similar would be to interview children and teenagers in order to discover how they experience the basic social process while being cared for by the AP prior to induction. Is letting go of control and autonomy an even greater concern for those who are still dependent on their parents for survival? Will a third party (the parents) in the sociality of the patient and the AP have a different effect on the outcome of a potential grounded theory than was the case in the first study (Study I)? Thus, a second grounded theory study is warranted with accopanying psychometric testing.

A third aspect of interest would be to explore surrendering in diverse cultural and/or religious settings. Is the surrendering experience perceived differently among people with a strong spiritual belief or a cultural background that differs from the western norm of individuality? This would require the distribution of questionnaires to two (or more) groups of people with a different cultural background and/or religious faith.

Recognition

Due to the complexity of the construct, future research can take various directions. Perhaps recognition needs to be explored in a more specific manner. The first direction would be to repeat Study IV using a larger sample. The second would be to further refine the items through additional inductive studies, e.g., phenomenology with in-depth interviews, where the lived experience of recognition and its meaning can be taken into account from the perspective of both the patient and the AP. What

constitutes recognition and what significance does it hold for the nurse anesthetist and the anesthesiologist? Does the meaning held by the two APs differ in any way? The questionnaire should be tested anew with principal component analysis to see whether the overall variance in the matrix can be strengthened. If that should/proves to be the case, continuing with a corrected total-item correlation analysis and confirmatory factor analysis (as explained above) would be logical.

Although earlier research has revealed a basic social process of recognition between the AP and the patient, Study IV showed that recognition influences both the patient and the professional who provides care in the encounter. An additional study with grounded theory that includes a larger sample (20-40 informants) could either confirm previous qualitative research and/or further improve existing inductive knowledege about recognition between the AP and the patient. While the findings in Study IV is from the perspective of the nurse anesthetist, no grounded theory or psychometric studies exists that highlights the basic social process between the anesthesiologist, as AP, and the patient. Would the outcome be different?

Svensk Sammanfattning

Summary in Swedish

Denna avhandling med titeln; **Surrendering to Anesthesia - An Interpersonal Construct in the Caring Encounter within the Context of Anesthesia Care**, består av fyra delarbeten och har sin bakgrund i den högteknologiska vårdens utmaningar i samband med anestesi. Anestesiologisk vård är teknikintensivt och försätter patienten i ett trefaldigt underläge bestående av:

- Sårbarheten i att vara sjuk och nödvändigheten i att behöva bli sövd för att kunna bli opererad
- Att vara längst ner i en hierarkisk miljö där patienten är avpersonifierad och utlämnad på ett operationsbord
- Ett kognitivt underläget i form av att vara främmande för terminologin, tillhörande procedurer och eventuell avsaknad av erfarenhet av själva händelsen i att bli sövd och opererad.

Enligt Socialstyrelsens statistik för 2016 opererades drygt 800 000 personer inom slutenvården i Sverige, bland vilka allt fler äldre opereras i tillstånd av samsjuklighet i form av hjärt-, njursjukdom eller diabetes. Unders samma period opererades omkring 2 000 000 personer för dagkirurgiska ingrepp. Resultat från en global studie, omfattande 27 länder och 45000 deltagande patienter, har visat att 17 % av de opererade patienterna drabbades av per- och postoperativa komplikationer vilket femfaldigade mortalitetsrisken. Därför är det inte helt utan risk att överlämna sig för sövning och kirurgi. En visshet som riskerar att skapa en oro hos patienten, som ska överlämna sig till anestesi, och väcker samtidigt en stark ansvarskänsla hos dem som ansvarar för den anestesiologiska vården under operation.

Tidigare forskning inom anestesiologisk omvårdnad har fokuserat på fysiologiska och psykosomatiska reaktioner på anestesi samt patienters upplevelse av att bli sövd. Även perioperativ kommunikation har studerats liksom företrädarskapet (jmf eng. advocacy) och vad som är ett professionellt bemötande. Vad som saknats är den vårdvetenskapliga grundforskningen kring vad det faktiskt innebär att överlämna sig till anestesi. Vidare, har kunskaper om anestesisjuksköterskans explicita vårdande samt förmåga att identifiera patientens sårbarhet, i form av total kontrollförlust för patienten, varit bristfällig.

Avhandlingens består av vårdvetenskaplig grundforskning med metoden grundad teori samt psykometrisk test-teori i syfte att utveckla ett teoretiskt ramverk för vård i högteknologisk miljö i samband med anestesiologisk vård. Delstudierna I, II och III avhandlar patientens perspektiv på att överlämna sig (eng. *surrendering*) till anestesi och den tillhörande kontrollförlust som det medför. Delstudie IV avhandlar anestesisjuksköterskans bekräftelseförmåga (eng. *recognition*) av att patienten över- lämnar sig för anestesi.

Första delstudien (I) utgör grundforskningen om, och teoriutvecklingen av, begreppet *Surrendering*. Andra delstudien (II) utvecklar ett instrument (*Anesthesia Surrendering Instrument* (ASI)) för att mäta patientens upplevelse av att överlämna sig till anestesi i tillägg till att testa det hypotetiska ramverkets begreppsvaliditet (tillämplighet), d.v.s att instrumentet mäter det den avser att mäta.

Den tredje delstudien (III) innefattade en fördjupad utvärdering av instrumentets begreppsvaliditet och reliabilitet (tillförlitlighet) vilket hjälpte till att belysa skillnader mellan män och kvinnors svar på olika påståenden i ASI. Gemensamt för delstudierna II och III är att alltför svaga påståenden sållades bort, avseende begreppsvaliditet (II) och reliabilitet (III). Med hjälp av ASI kan hälso- och sjukvården mäta hur patienter upplever sitt möte och överlämnande i samband med nedsövning vilket kan användas för att värdera vårdkvalitet inom anestesiologisk vård.

Baserat på tidigare forskningsfynd om professionell bekräftelseförmåga hos anestesisjuksköterskor, avhandlar delstudie IV anestesisjuksköterskans perspektiv med fokus på begreppet, och anestesisjuksköterskans förmåga till, bekräftelse (eng. *recognition*) i samband med att patienten överlämnar sig (*surrender*) för anestesi. Delstudie IV utgörs därför av instrumentutveckling och utforskande av det hypotetiska ramverkets begreppsvaliditet. Förslagsvis kan det teoretiska ramverket bidra till en pedagogisk ram inom specialistutbildningen till anestesisjuksköterska. Vidare, verka som ett stöd vid professionell handledning av anestesisjuksköterskor och i tillägg visa på ett möjligt *ethos* (karaktärsdrag; förmåga att bekräfta) i anestesiologisk omvårdnad.

Sammanfattningsvis kombinerar denna avhandling grundforskning och metodutveckling på ett innovativt sätt. Den bidrar med helt ny kunskap avseende såväl patientens överlämnande till anestesi som anestesisjuksköterskans professionella hanterande av denna situation. Det nya är att avhandlingen genererar ett validerat och reliabelt PREM-mått (*Patient-Reported-Experience-Measures*) för anestesiologisk vård, men också ett testat teoretiskt ramverk för anestesisjuksköterskans utbildning och professionella utveckling.

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