CHAPTER 1

General Introduction
Given the Hippocratic Oath, it becomes clear that since ancient times the art of healing is something which not only includes knowledge and technical skills but constitutes a total cognition of professional behavior (Edelstein, 1943). Although dating back to about 400 years BC, nowadays medical practice is still imbued with the Oath's basic principle: ‘primum non nocere,’ literally, ‘you shall not harm.’ This core value of ethical care is connected to the following aspects: a) respecting the patient’s autonomy, b) serving patients to their best interests by doing them justice, c) treating them with dignity and d) acting with transparency, which enables informed consent for the received care (Pellegrino, 2006). Once these aspects of ethical care are at risk of becoming jeopardized, either by the patient’s self-determination or due to reaching the limits of medicine and its technology, one may speak of the emergence of a moral dilemma (De Haan, 2001). As soon as a moral dilemma emerges, some skills to solve the dilemma are necessary as an impetus of ethical decision making and good clinical practice.

Beholding the presumption that healthcare delivery is a moral enterprise, inherently moral dilemmas, and moral conflicts occur on a daily basis. For this, the overarching research question of this doctoral thesis is: “What factors influence healthcare personnel in dealing with moral dilemmas? In this thesis, I study the antecedents of ethical decision-making among two master’s trained professionals, namely those of Physician Assistants and Nurse Practitioners, who both hold their own professional responsibility in treating patients.

1.1 Background of sampling Physician Assistants and Nurse Practitioners

Around the year 1995, a medical workforce shortage was predicted for the Dutch healthcare system. A solution was sought in medical task shifting by introducing nurse practitioners (NPs) and physician assistants (PAs) in the years 1995 and 2002, respectively, to support medical doctors in patient care. Both professionals are trained at the master’s level but distinguish in their professional scope of practice. NPs, in the Netherlands are viewed as ‘nursing specialists’, who largely conduct medical tasks categorically arising from their domain of nursing practice, whereas PAs practice medicine in the full breadth of a medical specialty and are classified as a new type of medical provider. Both professions have acquired a legal foundation to practice autonomously, though in collaboration with a medical doctor (De Bruijn-Geraets et
al., 2018). With these Master-trained clinicians in place, both have their professional association and consequently, own code of professional conduct. Incorporated in these codes of conduct is the statement that NPs and PAs have knowledge about and know how to deal with ethical issues in practice. However, the manner in which both professionals (NPs and PAs) deal with ethical issues in their work-setting has neither been researched nor been reported about as such, and therefore became the populations of interest.

1.2 A plethora of Models on Ethical Decision-making

With regard to empirical studies in researching ethical decision-making, two landmark review papers were published and these were extensively cited since then. Both papers report on empirical literature concerning ethical decision-making, both however having two distinct timeframes of inclusion. Whereas O’Fallon and Butterfield reviewed the literature from 1996 to 2003, Jana Craft, in her report, included papers that were published between 2004 and 2011. (Craft, 2013; O’Fallon & Butterfield, 2013). With these papers spanning an impressive 15 year period, a similarly staggering number of empirical studies (respectively: $n=174$ and $n=84$) were included, accompanied by multiple theoretical models, containing numerous constructs of interests within these. Both the work of O’Fallon and Butterfield, as also Craft’s paper, chose to categorize the literature by way of plausible constructs that represent the ethical decision-making process, namely: 1) awareness/recognition, 2) judgement/reasoning, 3) moral intent, and 4) behavior. Both reviews also provide insight into the many individual factors, such as age, gender, locus of control and many others, the function of which are dependent on these variables.

Even though more recent literature sheds a new light on ethical decision-making as being a rather more non-deliberate chain of processes including intuition, identity and biases (Moore & Gino, 2015), for this doctoral thesis the Four Component Model of Moral Behavior (FCM), however, serves as a foundation for the conducted research. For the simple reason of keeping in close connection with the amount of literature available, this doctoral thesis is predominantly influenced by the FCM (J. R. Rest, Thoma, & Bebeau, 1999), as well as by Albert Bandura’s moral disengagement theory (Bandura, 1999) and some other antecedent constructs of ethical decision-making have been included since they were assumed to also explain ethical behavior. The rationale for extending the FCM will be further explained in the next paragraph.
1.3 James Rest’s Four Component Model of Moral Behavior

The FCM is an extension of Kohlberg’s model of Moral Development. Kohlberg’s model (Kohlberg & Hersh, 1977) explains moral judgment. According to the level of one’s moral judgment skill the model states from within that a person can be classified to be within one of the three major levels: (i) pre-conventional, (ii) conventional and (iii) post-conventional. Each of these levels is again divided into two stages. Reaching the post-conventional level of moral reasoning reflects principled conscience. Whereas Kohlberg’s theory thus focuses on the assumption that “moral judgement” is the only process in the psychology of morality, James Rest suggests that three other essential components must be incorporated into the explanation of the ethical decision-making process. Therewith the FCM includes the following processes to explain moral behavior, namely: 1) moral sensitivity/awareness, 2) moral reasoning/judgement, 3) moral motivation and 4) moral courage/character. Each of these components reflects the latent or underlying psychological processes and were measured in this doctoral research with self-report measures, either translated into Dutch or developed as new Dutch instruments.

1.3.1 Conceptualization and operationalization of Moral Sensitivity

As soon as a moral dilemma arises, there is a need to recognize the conflict situation. The FCM’s first component, moral sensitivity, is conceptualized as the first and essential precursor for moral behavior. Rest defines moral sensitivity as: “a combination of one’s recognition of moral issues, and how one reacts and processes these issues from an affective perspective within a social context” (J. R. Rest, 1986). After James Rest introduced the FCM, many researchers in the field of moral psychology attempted to develop instruments measuring moral sensitivity. Nonetheless, it is apparent that not only are there a multitude of instruments being developed, but also a plurality of competing interpretations of the concept. In the literature, both moral sensitivity, as well as ethical sensitivity have been spotlighted. This becomes obvious in several of the works reviewing both the concept and instruments available for measuring either moral sensitivity or ethical sensitivity (Jordan, 2007; Weaver, 2007).

In a review by Bebeau, ethical sensitivity is defined as “the awareness of alternative courses of action, knowing cause-consequence chains of events in the environment, and how each could affect the parties concerned” (M. J. Bebeau, 2002). An important point made by Bebeau is that ethical sensitivity is embedded in a professional
setting, that is, knowing the regulations, codes of conduct, and how one applies one's professional values and norms, whereas, the alternative perspective of moral sensitivity is rather a pure intra-personal concept. This alternative perspective was introduced by Lützén and colleagues, grounded in a healthcare and nursing perspective (Lützén, Nordström, & Evertzon, 1995).

As part of her doctoral research, Lützén conducted a qualitative study (Lützén, Nordin & Brolin, 1994) as an impetus to generate items for the conceptualization and instrumentation of measuring moral sensitivity. Six categories were defined for the moral sensitivity construct. In their aforementioned 1994 study, Lützén, Nordin, and Brolin reported their first findings on the conceptualization and instrumentation of moral sensitivity. In this early stage of their work, the tested instrument was known as the moral sensitivity test (MST). The MST was administered among 79 nurses working in psychiatric practice. The MST included 35 pre-coded items covering the categories: interpersonal orientation, structuring moral meaning, expressing benevolence, modifying autonomy, experiencing conflict, and reliance on physician knowledge. Items were phrased as statements and answers, in Likert-type format, from totally disagree (=1) to totally agree (=7). The uneven distribution of items per category was assumed to be inevitable because of the theoretical overlap in statements. The latter supported the authors’ assumption of the uni-dimensionality of the instrument. Five of the 35 items were excluded because they either correlated negatively or correlated low with the total score. The reliability, expressed by Cronbach’s alpha, for the total scale was 0.64. To support the uni-dimensionality of the instrument, the items of the six categories were clustered into a subscale A and a subscale B, eliciting near equal estimates of reliability (subscale A: α=0.62 and subscale B: α=0.60). Even though a weak positive correlation was found between the subscales, a Pearson’s correlation analysis for the subscales and the total score of the instrument revealed high positive correlation scores of 0.83 and 0.73, respectively. This positive correlation was not found in all categories and was therefore viewed as contradictory vis-à-vis the assumption of uni-dimensionality, in addition to the small sample size mentioned.

After the first study in 1994, Lützén and colleagues followed up with another study by measuring moral sensitivity among nurses working at two psychiatric clinics and two medical-surgical clinics. (Lützén, Nordstrom, & Evertzon, 1995) In this study, the test previously known as MST was baptized the “Moral Sensitivity Questionnaire” (MSQ). The final number of participants was 215, and there were no missing values among
the 30 items of the MSQ. According to the authors, an exploratory factor analysis demonstrated that the six categories defined earlier (1994) could be retained. Despite the “relatively low Cronbach’s coefficient alpha for each category,” the total scale elicited a Cronbach’s alpha coefficient of 0.78. Furthermore, in this study, the authors maintained their position that the instrument was unidimensional, derived from their standpoint that “the total score can be seen as an indication of the respondent’s attitude towards moral issues in nursing practice.”

Following the measurement of moral sensitivity among nurses, the first “doctor’s version” of the moral sensitivity questionnaire was developed and administered among psychiatrists (Lützén, Evertzon, & Nordin, 1997). This version of the MSQ was only slightly modified, for example, with the word “nurse” being replaced by “psychiatrist.” As in the nursing studies, the MSQ survey among psychiatrists maintained the assumed categories – 1) interpersonal orientation, 2) structuring moral meaning, 3) expressing benevolence, 4) modifying autonomy, 5) experiencing moral conflict, and 6) confidence in medical knowledge. Nevertheless, the outcome for the reliability and validity of the MSQ psychiatrist version was worrisome, with a Cronbach’s alpha of 0.64 for the scale. One plausible reason cited as justification for this lower internal consistency was ascribed to the fact that the MSQ initially had been developed on grounded theory effectuated through qualitative research and conducted among nurse samples and not among physicians. Key was the assumption of different levels of professional responsibility between nurses and physicians, thereby a different sensitivity to moral issues in daily practice.

Despite the somewhat lower reliability and validity, it was opted to use this doctor’s version of the MSQ for this doctoral study. The reason for this is because we felt comfortable with the thought that the instrument measures what we purported to measure in terms of moral sensitivity among our sample, namely that of NPs and PAs. Also, the instrument aligned with the theorization of the concept, namely: “moral sensitivity is the contextual and intuitive understanding of the vulnerability of a person’s situation and insight into ethical consequences of decisions made on behalf of the person.” Therewith the instrument was deemed to fit as an appropriate indicator for one of the theoretical constructs within the “Four Component Model of Moral Behavior” as introduced by Rest and colleagues (J. R. Rest et al., 1999) and directional for the research as reported in Chapter 2 of this doctoral thesis.
1.3.2 Conceptualization and operationalization of Moral Reasoning

The second component of the FCM is moral reasoning, which is considered to be a cognitive developmental structure, and one of the most extensively studied constructs included within the FCM (M. J. Bebeau, 2002). Moral reasoning - interchangeably also indicated as moral judgment - can be viewed as a skill that determines the course of action to proceed towards action, once the best choice of all available alternatives has been 'judged.' Moral reasoning is subject to development (i.e., with the increase of age, education, the level of reasoning) as assumed by Kohlberg's development theory (Kohlberg & Hersh, 1977). To say, a person will - from childhood through adolescence towards adulthood - advance along a stage-sequence of cognitive moral development; from respectively the pre-conventional-, via the conventional-, to the post-conventional stage. With the latter stage reflecting the focus on universal principles. The Defining Issues Test (DIT), developed by James Rest (J. Rest, Thoma, Narvaez, & Bebeau, 1997b), is one of the most used and researched indicators to measure the level of moral reasoning (King & Mayhew, 2002; J. R. Rest, Narvaez, Thoma, & Bebeau, 1999a; Schlaefli, Rest & Thoma, 1985). Furthermore, over the last couple of decades, the DIT has evolved towards the generally accepted gold standard to assess respondents' level of moral reasoning and is upheld by good psychometric properties and several types of validity (J. R. Rest, Narvaez, Thoma, & Bebeau, 1999b), including a settled cross-cultural validity (Moon, 1985).

To assess the level of moral reasoning, I, as reported in Chapter 3 of this doctoral thesis, used the Dutch short-form version of the DIT (Raaijmakers, Engels, & Van Hoof, 2005). In the DIT (short form) that I used, participants were presented with three standard scenario-based moral dilemmas, namely: “Heinz and the drug,” “The escaped prisoner,” and “The newspaper.” Each scenario was followed by eight statements that were meant to evoke the respondent’s deliberations in solving the dilemma.

**DIT Rating scales.** For each moral dilemma, eight statements were to be answered on a 5-point Likert-type scale ranging from “very unimportant” (1) to “very important” (5) and were considered to be indicative of a specific stage in the level of moral reasoning: a) Personal interest, b) Maintaining norms, and c) Post-conventional. After rating all eight statements for each dilemma, the participant was asked to rank four statements out of eight as “most important,” “second in importance,” “third in importance,” and “fourth in importance.”
**DIT and the N2 Index.** The N2 index is an indicator of moral reasoning and has a two-part construction. The first part reflects the degree to which post-conventional arguments are prioritized in solving the moral dilemmas presented. This part of the N2 index resembles both the traditional P index (calculated solely based on ranking data) and rating data reflecting the degree to which higher-stage arguments are rated higher than the ratings of lower-stage arguments by subtracting lower-stage reasoning scale scores from the ratings on higher-stage reasoning scale scores. After standardizing the scores of the second part in such a way that both parts show the same mean and standard deviation, the N2 score is computed by adding the resulting scores of the two parts. For calculating the N2 index, we followed the explanation as reported by Rest and colleagues, both in their article and a purchased manual (J. R. Rest, 1990; J. Rest, Thoma, Narvaez, & Bebeau, 1997a).

### 1.3.3 Conceptualization and operationalization of Moral Motivation

Moral motivation is the third component of the FCM. Simply put, moral motivation stands for the ability of giving importance to competing choices. A deficiency in moral motivation could be for example favouring to see and treat patients who will generate higher revenues, whereas the other patients having problems with less favorable incentives also need care. So instead of making the moral choice of treating all patients regardless of whether they will generate more revenue, going for ultimately the lucrative cases is a lapse in moral motivation. With the suggestion that ‘identity’ is a source of moral motivation, it is assumed that once morality is crucial and pivotal to the self-sense and identity, it elevates the sense of responsibility and obligation to act consistently with the own moral concerns (Hardy & Carlo, 2005). It was the moral motivation component that led Aquino and Reed to conceptualize their understanding of ‘moral identity’ and defined it as: “a self-conception organized around a set of moral traits.” Moral identity is considered not to be antithetical to the cognitive developmental model but rather complementary in identifying a social psychological motivator of moral conduct. Herewith it is appropriate to assume that moral identity serves as a precursor towards moral action. Aquino and Reed distinguish two separate factors of moral identity, namely: i) internalization and ii) symbolization, which are measured by the Moral Identity Measure (MIM) (Aquino & Reed II, 2002). The factor of internalization entails the degree to which moral principles are linked to an individual's self-concept and the factor of symbolization is especially focused on how the individual likes to be perceived publicly for her/his moral self.
The MIM measures both of these dimensions of self-importance. The MIM is a 10-question self-report instrument that asks the respondent to keep in mind the following nine characteristics that might describe him/herself or any person: caring, friendly, helpful, compassionate, generous, honest, fair, hardworking, and kind. Respondents are asked to visualize in their minds the kind of person who has such characteristics and asks them to imagine how that person would think, feel, and act. Respondents are then asked to rate the 10 statements on a seven-point Likert scale, from “strongly disagree” (=1) to “strongly agree” (=7). These statements assess the extent to which morality is important for the participant's sense of self-identity in terms of two dimensions, public and private. These two dimensions are defined in the measurement as “Symbolization,” or public, and “Internalization,” or private.

However, regarding the component ‘moral motivation,’ little research is known to be conducted among health professionals, despite the fact that several studies conclude that moral identity is a predictor of moral action (Damon & Gregory, 1997). For this reason, we developed a context-specific indicator for measuring moral identity in this doctoral research, which we introduce as Ethics Advocacy (EA). This novel concept is defined as: “the importance that individuals attach to ethicality within the specific context of healthcare delivery.” More specifically, EA entails the extent to which healthcare professionals consider it important for attention to be paid to the ethical aspects of care within their organization and during patient contact. The link to moral identity is a logical one, especially because EA reflects an internalized set of moral principles. In Chapters 2 and 4, EA is used as an explanatory variable.

### 1.3.4 Conceptualization and operationalization of Moral Character and implementation

Moral Character and ethical implementation compose the fourth integrative component of the FCM, which may be conceptualized as having the moral courage to act upon one’s moral motivations and judgment. As described by Bebeau, it relates to being strong-willed and not yielding to pressure. As such, it “attends to the importance of character to effective and responsible care (Bebeau, 2002). Since character may be viewed as one of the five factors that create a personality (McDougall, 1932), in this present doctoral work, it was found plausible to measure personality traits as a proxy for character, and in line with that: the attitude or behavior. A trait-based approach of defining moral character can be underlined by the rather recent operational
definition of Cohen et al, namely: “moral character can be viewed as individual’s characteristic patterns of thought, emotion, and behavior associated with moral/ethical and immoral/unethical behavior” (Cohen, Panter, Turan, Morse, & Kim, 2014). For this in Chapter 3 of this doctoral thesis we at first tested whether the higher-order personality traits ‘Stability’ and Plasticity (based on the Big Five Personality traits) as proposed by DeYoung et al. are explanatory variables towards the level of moral reasoning (DeYoung, 2006). Second, regarding the behavioral aspect of moral character we introduced in both the studies of which is being reported in Chapter 4 as also in Chapter 5, two different scripts of (un)ethical conduct to assess the behavioral aspect of the fourth component of the FCM. Whereas in Chapter 4 we reported about a vignette-based indicator that reflects a newly introduced concept of ‘reporting reprehensible conduct’, in Chapter 5 we have opted to construct vignettes that has built in the stimulus of the propensity of ‘yielding to pressure’. Regarding ‘reporting reprehensible conduct’ respondents were asked to identify the likeliness of reporting morally questionable behavior they observed among colleagues. This was assessed in relationship with the concept of Ethics Advocacy and behavioral control targeted at preventing harm. With this type of (un)ethical conduct we intended to develop a healthcare context-specific indicator for whistleblowing. This can be seen as a judgement of morality outside the self, whilst upholding the own moral standards, once the act involved reporting that morally reprehensible behavior. With the vignettes that measured the tendency of yielding to pressure we constructed the vignettes in such a way that the (un)ethical conduct immediately addresses the own moral self.

1.4 Moral disengagement: theory and measurement.

During recent years behavioral ethics research tends to focus on non-deliberate processes that might contribute in explaining (un)ethical conduct (Moore & Gino, 2015). Explorations are set out to the unconscious processes such as intuition and emotion being at the interplay of unethical conduct (Schwartz, 2016). In that, it is Albert Bandura who already also stressed that there is much more involved in the process that regulates the human conduct regarding solving moral dilemmas than only the underlying psychological processes as assumed in the rationalist-based approach of the FCM. For example, in Bandura’s social cognitive theory (Bandura, 1986; Bandura, 1991) it is suggested that moral reasoning may lead to action, but that this is only possible through self-regulation rooted in one’s own moral
standard. In other words, it’s about people using cognitive mechanisms convincing themselves that what they are doing is morally acceptable. All of this with the sole purpose to “reconstruct” or “reframe” their own morally dubious behavior to justify it. Bandura proposed that this moral control selectively can be activated or disengaged (Bandura, 1990). This self-influence or control is seen by Bandura as a continuous process motivating and regulating the moral conduct. Bandura proposed that there were eight mechanisms involved in the interplay behind the perpetration of inhumanities: (a) moral justification, (b) euphemistic labelling, (c) advantageous comparison, (d) displacement of responsibility, (e) diffusion of responsibility, (f) distorting consequences, (g) attribution of blame, and (h) dehumanization. Each of the aforementioned mechanisms are represented by a subset of four items.

Carroll reported that moral disengagement was negatively correlated with the level of moral reasoning (estimated with the N2 score), indicating that lower disengagement (more self-censured behavior) is correlated with higher levels of moral reasoning (Carroll, 2009). Also, Dineen explored moral disengagement of medical providers as a contributing factor in ethical decision-making, in the continued reality that clinical practices often perpetuate the inadequate treatment that may occur by “progressive disengagement of self-censure” (Dineen, 2012).

In this doctoral thesis in all chapters reporting about the conducted studies the propensity of moral disengagement has been incorporated as an explanatory variable, albeit with different hypotheses. As an indicator of moral disengagement, we have adapted the original moral disengagement scale (MDS) by rephrasing its 32 items in such a way that they were more appealing to our respondents, all working in the perspective of Dutch healthcare. Psychometric assessment by Bandura and colleagues demonstrated a unidimensional scale with a Cronbach’s alpha of 0.83. Initially, this questionnaire was developed to measure moral disengagement among children and young adolescents. Our modified moral disengagement scale has a Cronbach’s alpha of 0.85. The psychometric properties of the scale that was used in the several studies as reported in the Chapters 2, 3 and 5 in this doctoral thesis was consistent with the findings by Bandura and colleagues and demonstrated that translation and adaptation had not affected the internal consistency of the scale.
1.5 The concept of Behavioral Control targeted at Preventing Harm

In this thesis the construct of Perceived Behavioral Control has been a construct of interest, because even though moral awareness/sensitivity and motivation can be very high, if an individual does not feel that the ability to behave morally (e.g. because the context does not allow it and / or because you feel powerless), then that does not result into moral behavior. For this we developed a healthcare context-specific indicator which roots from the Hippocratic principle of “First, do no harm” and measures a degree of behavioral control (Ajzen, 1991). This was operationalized by employing the concept of “Perceived Control of Preventing Harm.” The result was the development of the “Behavioral Control targeted at Preventing Harm” (BCPH) scale, consisting of five items: 1) “I always feel responsible for proper patient care, even if the resources are insufficient”; 2) “My skill in assessing the needs of the patient always helps me in my work”; 3) “I can always properly assess whether and when a patient should be told the truth”; 4) “I can easily sense when a patient is not receiving proper care”; and 5) “In patient care, I am always aware of the balance between performing the task well and the risk of harm to the patient.” Scoring high on the BCPH indicates that the respondent has a stronger behavioral control of abstaining from doing harm. In this doctoral thesis in **Chapter 2** and **Chapter 4** the indicator BCPH was used as an explanatory variable.

1.6 Outline of this doctoral thesis

There is a two-fold aim of this PhD research doctoral thesis; first, to assess antecedents of ethical conduct among Physician Assistants and Nurse Practitioners, since this has never been done before, neither in the Netherlands nor globally. For being able to do so first, the necessary indicators of the aforementioned constructs had to be validated, i.e. indicators for the constructs of the FCM, moral disengagement and perceived behavioral control. All in order to address the second aim of this PhD research, namely, to assess them as appropriate antecedent, explanatory variables in respect of ethical conduct.

**Chapter 2** presents the outcomes of an attempt to validate the Moral Sensitivity Questionnaire which was translated into Dutch and adapted to the PA and NP professions. The six theoretical proposed dimensions as proposed by the developer of the MSQ (which was deemed as an appropriate indicator to measure the FCM's
component of moral sensitivity) could not be reproduced by exploratory factor analysis (EFA). With the study presented in Chapter 2 however two novel dimensions derived from the MSQ items are introduced and named as MSQ-DELIB and MSQ-PATER, respectively operationalized as indicators of a moral deliberate attitude and paternalist attitude based on the outcomes of a robust confirmatory factor analysis (CFA).

Chapter 3 describes the outcomes of a structural equation modelling in which evidence is reported for the personality meta-trait Stability being a statistically significant direct predictor on the level of post-conventional moral reasoning. In this it examines antecedents of moral reasoning as the second component of Rest's FCM. Furthermore, it was found that the statistically significant relationship between the personality meta-trait Stability and the post-conventional level of moral reasoning is explained by a lower propensity to morally disengage among highly stable people.

Chapter 4 reports about the outcomes of a moderation analysis. In the relationship between Ethics Advocacy, as an indicator of the third component ‘Moral Motivation’ of the FCM, and the propensity of reporting reprehensible conduct in care, behavioral control targeted at preventing harm is strengthening that relationship.

Chapter 5 delineates a similar analysis as conducted in the study being reported about in Chapter 4, but in Chapter 5 it was attempted to validate the predictive value of the MSQ-DELIB and MSQ-PATER as explanatory variables towards a novel construct introduced as ‘Yielding to pressure’. The major finding of this study is that individuals with a highly morally deliberate attitude are more at risk for yielding to pressure and therewith have a tendency of deviating from the rules and regulations within a direct clinician-patient interaction, whereas this does not account for situations when the pressure is perceived from the direct working environment.

The main findings of my doctoral research as reported in the previous mentioned chapters are summarized in Chapter 6 with the view to opening a venue for future directions regarding possible supplementary research.
REFERENCES


Chapter 1


