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The Role of Perceived Uncertainty, Ego Identity, and Perceived Behavioral Control in Predicting Patient's Attitude toward Medical Surgery

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Abstract

Medical surgery has sometimes become the only best choice for a patient's well-being. Unfortunately, not all patients have the willingness to live it. Often, therapeutic failure is caused by uncooperative attitudes of the patients which originate from their negative attitudes toward the surgery. This research is aimed at finding a theoretical model to explain psychological factors forming the patient's attitudes. This predictive correlational research was conducted on 99 patients suffering heart disease and cancer continuum who require medical surgery in DKI Jakarta, Indonesia. Research results showed that a commitment aspect of ego identity is able to indirectly predict attitude toward medical surgery through mediation of perceived uncertainty. Perceived behavioral control directly predicts the attitude in a negative direction. This research concludes that patients' commitment towards their identity plays a significant role as they deal with medical surgery.

Abstrak

Peran Persepsi Ketidakpastian, Identitas Ego, Persepsi Kendali Perilaku Pasien dalam Menyikapi Operasi Medis. Operasi medis kadang merupakan pilihan terbaik dalam rangka kesejahteraan hidup pasien, namun tidak semua pasien mau menjalaninya. Kegagalan terapeutik seringkali disebabkan oleh tidak kooperatifnya pasien yang berpangkal dari sikap negatif pasien terhadap operasi medis. Penelitian ini bertujuan untuk menemukan model teoretis yang menjelaskan faktor-faktor psikologis dalam diri pasien yang berperan dalam membentuk sikap tersebut. Penelitian korelasional prediktif ini dilakukan terhadap 99 pasien berpenyakit jantung dan kontinum kanker yang membutuhkan operasi di DKI Jakarta. Penelitian ini menunjukkan bahwa aspek komitmen dari identitas ego mampu meramalkan sikap terhadap operasi medis secara tidak langsung melalui mediasi persepsi ketidakpastian. Persepsi kendali perilaku meramalkan sikap tersebut secara langsung dalam arah negatif. Penelitian ini menyimpulkan bahwa komitmen terhadap identitas berperan signifikan dalam diri pasien ketika menyikapi operasi medis.

Keywords: attitude, belief, ego identity, medical surgery, uncertainty

Introduction

Many patients with certain diseases require some medical treatment based on their factual situations.[1] Before they are recommended to have medical surgery, patients need to consider many things, such as surgery procedures, the specialists involved in running the procedures, the surgery types and settings, the potential complications, alternatives to surgery, and unnecessary surgery situations as to the latest debates and controversies on medical surgery innovations.[2,3] However, if all considerations lead to the conclusion that surgery is inevitable, or when it is assumed to be the only solution to save their lives, the question arises: What factors influence the patient to have (or not to have) surgery? The question is very important to investigate due to the fact that a high number of patients have come late for their surgery, resulting in a decrease of their quality of life or even a fatal outcome.[4] At the macro level, more and more productive generations experience premature death due to cancer and heart disease. The increase of "years of potential life lost"[5] could damage the quality of human resources and have a negative impact on the achievements of the development program.

One of the attributing factors leading Indonesian people to have a negative attitude toward surgery is the problem of expenses due to poverty. The government has tried to reduce the impacts of poverty by establishing access to

health services through Public Health Insurance (*Jaminan Kesehatan Masyarakat/ Jamkesmas*) and Social Security Agency–Beneficiaries (*Badan Penyelenggara Jaminan Sosial–Penerima Bantuan Iuran/BPJS-PBI*). However, because this existing factor is very understandable, this research tries to look at three other influential factors (non-economical), which are at the individual's psychological level.

This research, which aimed to contribute to the development of Indonesian health science, examined the attitudes toward medical surgery as the dependent variable, the perceived behavior control and ego identity as the predictor variable, and the perceived uncertainty as the mediator variable. All of the variables were psychological. To the authors' knowledge, this research with the combined variables is the first conducted in Indonesia, especially in the health field. It is true that, in literature research, there have been studies about human psychological aspects in terms of surgery. For example, the meta-synthesis research of O'Halloran and Altmaier has found that the following variables are necessary for the patient to have surgery: the increase of coping efficacy, the "appropriate" psychological intervention timing, and the possibility of the patient's intervention in group and/or with the patient's relatives.[6] Nevertheless, the research did not examine the attitudes toward medical surgery nor did it present a psychological model. Other research has used the variable of *surgery acceptance* and found that the acceptance is influenced by variables such as personalities, social process and structure, best timing misconception, the expected results from surgery, education levels, overestimation of surgery risks, degrees of relation and trust to doctors, as well as interpersonal and cultural factors.[7,8,9] However, the researchers did not present the psychological mechanism model of the medical surgery acceptance. This research was meant to fill in the literature gap.

Our research was focused on explaining the patient's attitude toward medical surgery as the dependent variable. Attitude is *one* of the behavior predictors, due to the fact that it is the tendency of belief, feeling, and behavior toward an object, group, event, or symbol considered significant.[10,11] In other words, attitude is a pivotal guide for behavior, though explicit attitude does not always work together with overt behavior,[10,11] and this has stimulated research on implicit attitude.

According to Ajzen, attitude is the favorable and unfavorable evaluation of the attitude object.[12,13] The attitude object in this research is the medical surgery. In the literature research, there have been consistent evidences that perceived uncertainty correlates with depression, anxiety, worsened life quality, lack of optimism, and negative mood.[14] By understanding the similar characteristics between the negative attitude and uncertainty, which are negative affection and uncomfortable feelings, this research hypothesized, "The higher the perceived uncertainty, the more negative the patient's attitude toward medical surgery" (H1; see Figure 1).

The uncertainty concept of medical surgery in this research derived from the theory of *uncertainty in illness*.[14,15] Mishel stated that uncertainty occurs when the illness of the patient is ambiguous, complex, and unpredictable and when information is unavailable or inconsistent. Uncertainty is a cognitive condition when an individual cannot adequately structurize or categorize the illness events due to the limited number of cues. The theory explains how a patient cognitively designs a subjective interpretation scheme of the uncertainty in illness, the medication or treatment of the illness, and its results. Uncertainty consists of components of antecedents, appraisals, and uncertainty coping.[14,15]

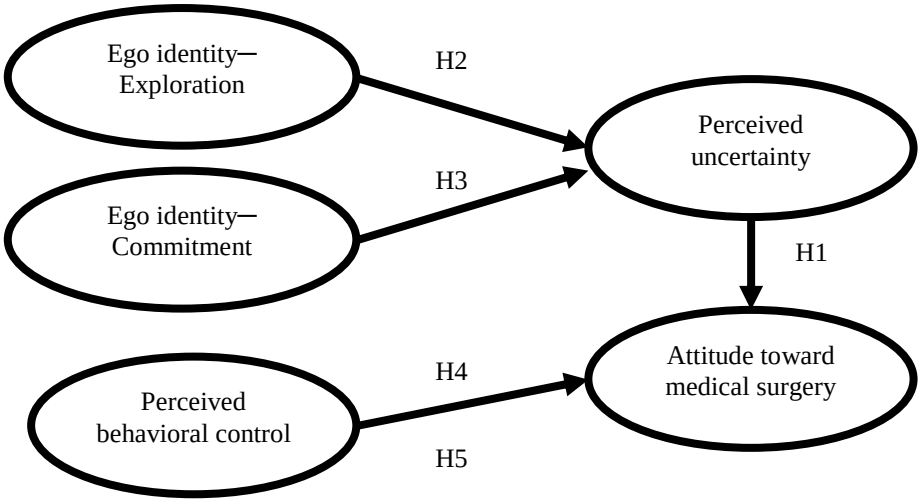


Figure 1. Research Hypothetical Model

The first component, *antecedent*, can be in the forms of stimuli framework, cognitive capacity, and structure providers.[14,15] The stimuli framework consists of the pattern of illness symptoms, familiarity and intimacy with the illness condition, and congruency between prediction and experience of the illness. Cognitive capacity is the individual's information process ability. Structure providers are the available resources to help the patient interpret the stimuli framework. The resources are education, social supports, and credible authority.

The second component, *appraisal*, is the value giving process for uncertain events or situations, which consists of inference and illusion.[14,15] Inference is the evaluation of uncertainty, which is formed together with personality disposition, experience, general knowledge, and contexts. Illusion is the belief construction established from uncertainty. The result of the evaluation is the view that uncertainty is a danger, or instead, an opportunity.

The third component, *coping with uncertainty*, depends on the evaluation.[14,15] If the uncertainty is considered dangerous, then the coping action is reducing the uncertainty and managing emotions generated from the "perceived danger." If the uncertainty is considered an opportunity, then the coping action is maintaining the uncertainty, in which the adaptation occurs, which is the bio-psychosocial behavior within the range of the individual's usual behaviors. Some research shows that the high uncertainty (associated with perceived danger) generates a coping strategy focused on emotions, like wishful thinking, avoidance, and fatalism. Nevertheless, some use a cognitive strategy, like making downward comparison (comparing self with others in worse conditions), developing personal scenario, utilizing faith and religion, and recognizing signs and uncertainty stimulants.

Based on the concept of uncertainty in illness, the perceived uncertainty of the surgery in this research was operationally defined as the inability of the patient to: (1) derive the meaning of events related to the surgery, (2) get the definitive value of surgery, and (3) predict the surgery results accurately.

The meaning making and cognitive scheme, which are the significant components of the perceived uncertainty, seem to relate with the concept of *ego identity*, in which a person makes a structure of himself or his ego. This is because ego identity is related to the self-agency of a person, in which he takes control of his decision and becomes responsible for the decision's results. In addition, ego identity allows an individual to interpret or make meaning of the information, or it may lead to a person's response.[16]

In the beginning, the concept of ego identity derives from Erikson's psychosocial development approach, in which the identity development dominates the fourth stage of the eight development stages from birth to old age, though identity development exists on almost any development stage.[17,18,19] Marcia[19] further explained (p. 579):

> "*Identity formation … is the result of a synthesis of earlier identification …. A constructed … identity is the result of an exploratory, self-reflective, and integrative process wherein the individual attempts to make the best fit between self-perceived abilities and needs and available societal niches …. Another aspect of identity is an individual's 'style'—the particular way in which one goes about 'doing' one's life projects and 'being' in the world … Identity … from the ego developmental perspective, is viewed as a personality structure reaching its initial configuration at late adolescence and undergoing successive modifications … throughout the life cycle*."

Based on Marcia's theory, *ego identity-exploration* refers to active activities of questioning and weighting some identity alternatives before making a decision on values, beliefs, and pursued goals.[17,18] In other words, exploration is the activity of selecting, reconstructing, changing hierarchies, and testing some social roles, duties, and identities.[20] The *ego identity-commitment* refers to decision-making activities which are relatively steady regarding identity and self-involvement in actions leading to the implementation of the identity alternatives.[17,18]

Based on the above explanation, this research hypothesized, "The higher the exploration component of a patient's ego identity, then the lower his/her perceived uncertainty will be" (H2). Also, "The higher the commitment component of a patient's ego identity, the lower his/her perceived uncertainty will be" (H3).

The two identities mentioned above (exploration and commitment) are not a continuum facet, but can be unrelated. This means that people can (1) make a commitment without doing exploration, (2) do exploration without making a commitment, (3) do exploration followed by making a commitment, or (3) neither do exploration nor make a commitment.[17,18]

Marcia's theory, particularly in terms of commitment, structuring, consistency, and identity standing, has been criticized due to its contradicting view with the postmodern concept of identity. The concept is stated by Hall (p. 277)[21]:

> "*Within us are contradictory identities, pulling in different directions, so that our identifications are continually being shifted about. If we feel that we have a unified identity from birth to death, it is only because we construct a comforting story or 'narrative of the self' about ourselves*."

In other words, the postmodernism view is skeptical about the consistency and unified identity as stated in

Marcia's theory. Nevertheless, there have been efforts to integrate Marcia's theory of identity into postmodernism,[22] and other researches on health behavior today still use and discuss Marcia's theory of ego identity.

The attitude toward medical surgery may also be influenced by a person's behavioral control perception. It refers to an individual's perception of his ability to do something, including his belief of the existence of factors that can facilitate (or instead, hinder) his performance.[12,13] Although attitudes and perceived behavioral control are frequently treated as two independent predictor variables in predicting a person's intention to behave, there have been evidences that perceived behavioral control correlates with attitude.[23] Based on this thought, this research hypothesized, "The higher the perceived behavioral control of a patient on medical surgery, the more positive his/her attitude toward surgery" (H4).

If we integrate all of the previous hypotheses, from the first (H1) to the fourth (H4), then we could hypothesize, "There is a theoretical model which can be used to explain a variety of an individual's attitude toward medical surgery, as presented in Figure 1" (H5).

Methods

Participants and design. The participants of the research were 99 patients aged between 41 and 60 years (49 males, 50 females; M_{age} = 52.99 years old; SD_{age} = 5.576 years), taken with the purposive sampling technique. The patients with cancer disease were taken from Cancer Information Support Centre (CISC)'s *Rumah Singgah* (Shelter) in Jakarta, and those with heart disease were taken from Harapan Kita Hospital of National Cardiovascular Center. The number of participants for the pilot study (trying out measurement instruments) in this research was 50 patients.

This research used the predictive correlation design. The dependent variable is the attitude toward medical surgery. The predictor variables are ego identity-exploration, ego identity-commitment, and perceived behavioral control. The mediator variable is the perceived uncertainty. The data analysis was run by using the LISREL 8.8 program for field data (to test the fitness of the developed hypothetical model, or to test the compatibility of the theoretical model with the empirical data), and by using SPSS 21 for Windows for instrument testing data (to find the reliability measurement index of Cronbach's Alpha and the item construction validity index of corrected item-total correlations). The hypothesis scheme is presented in Figure 1. The research data analysis was done by using path analysis. The path analysis is an analysis method to find the relationship among three or more variables.[24] The criteria to determine whether the model is fit (compatibility between research model or measurement model and empirical data) are (1) Chi-square: Model is fit if p-value > 0.05;[24] (2) Goodness of Fit Indices (GFI): Model is fit if *GFI* > 0.90;[24] (3) Root Mean Square Error of Approximation (RMSEA): Model is fit if *RMSEA* < 0.10.[25]

Instrument. The measurement instrument for attitude toward medical surgery and for perceived behavioral control was derived from Theory of Planned Behavior (TPB).[12,13] The authors constructed the instrument for attitude toward medical surgery by using direct measurement, as presented in Table 1. The response options range from score 1 to score 6.

Table 1. Valid Items of Attitude toward Medical Surgery Measurement Instrument

For me, surgery is ….								
very worthy	1	2	3	4	5	6	very worthless	*Note*: for *unfavorable item*; response scores are reversely coded (e.g. 1 into 6; 2 into 5; 3 into 4; and so on)
very much appreciated	1	2	3	4	5	6	very much unappreciated	Note: *unfavorable item*
very important to have	1	2	3	4	5	6	very important to avoid	Note: *unfavorable item*
very interesting	1	2	3	4	5	6	very boring	Note: *unfavorable item*
very good for me	1	2	3	4	5	6	very bad for me	Note: *unfavorable item*
very beneficial in the long run	1	2	3	4	5	6	very harmful in the long run	Note: *unfavorable item*
making my life worse	1	2	3	4	5	6	making my life better	
very annoying	1	2	3	4	5	6	very pleasant	
very voluntary	1	2	3	4	5	6	very necessary	

The reliability testing results showed that the internal consistency index of Cronbach's α equals to 0.836 with the corrected item-total correlations ranging from 0.372 to 0.705; which means the instrument is reliable (α > 0.6) and the items are valid (r_{it} > 0.25). The total number of post-test items of all these attitude instruments is nine out of 11 items, to be further used in this research.

The measurement instrument of perceived behavioral control toward medical surgery was constructed by the authors based on Theory of Planned Behavior (TPB),[12,13] as presented in Table 2. The scaled response options range from score 1 to score 6.

The reliability testing results showed that the internal consistency index of Cronbach's α equals to 0.749 with the corrected item-total correlations ranging from 0.513 to 0.693; which means the instrument is reliable (α > 0.6) and the items are valid (r_{it} > 0.25). The total number of the post-test items in all these perceived behavioral control instruments is three out of seven items, to be further used in this research.

The measurement instrument of perceived uncertainty toward medical surgery was adapted from Mishel Uncertainty in Illness Scale (MUIS),[26,27] which consists of 23 items. The response options range from "Strongly Disagree" (score 1) to "Strongly Agree" (score 6). Examples of perceived uncertainty items are (1) "I have many unanswered questions about surgery," (2) "I'm not sure about the degree of pain in surgery," (3) "I have no idea as to when my disease will totally disappear after surgery," (4) "I could tell whether my surgery will succeed or not" (for unfavorable items, responses are reversely coded), and (5) "With so many doctors and nurses, I know that I could count on them" (unfavorable item). The reliability testing results showed that the internal consistency index of Cronbach's α equals to 0.890 with the corrected item-total correlations ranging from 0.322 to 0.729; which means the instrument is reliable (α > 0.6) and the items are valid (r_{it} > 0.25). The total number of the post-test items is 20 out of 23 items, to be further used in this research.

The measurement instrument of ego identity (exploration and commitment) was adapted from Ego Identity Process Questionnaire).[28] The instrument measures the exploration and commitment in ideological domains of life (occupations, religions, politics, and values) and interpersonal domains (family, friendship, romance, and gender roles). The response options range from "Strongly Disagree" (score 1) to "Strongly Agree" (score 6). Although the measurement instrument of ego identity is frequently applied to samples of students and younger people, Potoczniak, Aldea, and DeBlaere stated that it can be applied to adults (up to 74 years old),[29] based on the theory that the ego identity development can last to adulthood and senescence.

The measurement instrument of ego identity consists of 32 items; the first 16 measure exploration, and the other 16 measure commitment. Examples of ego identity-exploration items are (1) "I have considered adopting different kinds of religious beliefs," (2) "I have considered different political views thoughtfully." The reliability testing results show that the internal consistency index of Cronbach's α equals to 0.672 with the corrected item-total correlations of 0.506; which means the instrument is reliable (α > 0.6) and the items are valid (r_{it} > 0.25). The total number of the post-test items of ego identity-exploration is two out of 16 items, to be further used in this research.

Examples of ego identity-commitment items are: (1) "I have definitely decided on the career that I want to pursue," (2) "I am very confident about what kinds of friends are best for me," (3) "I have firmly held views concerning my role in my family," (4) "My beliefs about dating and marriage relationships are firmly held," (5) "When I talk to people about religion, I make sure to voice my opinion," (6) "Regarding religion, my beliefs are likely to change in the near future," (for unfavorable items, responses are reversely coded), (7) "I have definite views regarding the ways in which men and women should behave," (8) "I am not sure that the values I hold are right for me" (unfavorable item), and (9) "The extent to which I value my family is likely to change in the future" (unfavorable item). The reliability testing results showed that the internal consistency index of Cronbach's α equals to 0.856 with the corrected item-total correlations ranging from 0.375 to 0.680; which means the instrument is reliable (α > 0.6) and the items are valid (r_{it} > 0.25). The total number of the post-test

Table 2. Valid Items of Behavioral Control Perception Measurement Instrument

Surgery is …							
very difficult	1	2	3	4	5	6	very easy
very feasible	1	2	3	4	5	6	very bothersome
not easy to go through	1	2	3	4	5	6	easy to go through

Note: for *unfavorable item*; responses are reversely coded.

items of ego identity-commitment is nine out of 16 items, to be further used in this research. Therefore, the total number of post-test items of all ego identity-measurement (exploration and commitment) is 11 out of 32 items.

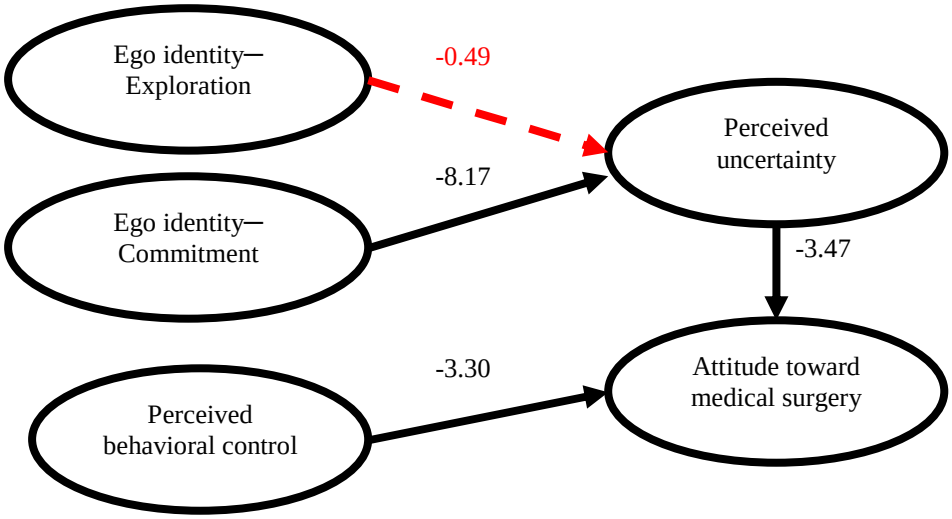
Procedures. The limited physical conditions of the participants did not allow them to fill in the questionnaire by themselves due to the ongoing treatment and their turn taking for doctors' visits at the hospital. The authors read the statements and questionnaires aloud to most of the subjects. The authors also helped fill in their verbal responses, after the informed consent was obtained and recorded.

Results and Discussion

The description of the research participants is as follows. The distribution of the participants' education background is bachelor's degree (40.4%), senior high school (35.4%), master's degree (9.1%), three-year diploma (8.1%), junior high and elementary school (7%). More than half are of Javanese (55.6%) and the rest are of Palembangnese (9.1%), Sundanese (11.1%), Bataknese (4%), Betawinese (4%), Kalimantanese (3%), Padangnese (2%), and others (11.2%). As many as 98% of them are married, and 2% are widow/widower. Based on the professions, 32.3% are housewives, 26.3% are retirees, 21.2% are civil servants, 11.1% are employees, 5% are entrepreneurs, and the rest (4.1%) have other professions. As many as 75.7% of the participants of this research confessed that they had had surgery before, while 24.3% stated that they had never had surgery. Based on the diseases, the distribution of the patients is as follows: those with heart disease (78.8%) and the rest (21.2%) with a variety of cysts, tumors, and cancers (breast, womb, thyroid, gallstones, and eyes); all needed medical surgery. In this research, information on their savings amount each month was collected as well. The data showed that 47.5% of the participants had savings of around 5 to 11 million rupiahs (or around 428 to 942 U.S. dollars) per month, 17.2% had savings of around 1 to 4 million rupiahs per month, and 35.4% had refused to state the amount of their savings.

Research on these 99 patients found that the hypothetical model as presented in Figure 1 is generally and empirically fit based on the criteria of p-value > 0.05, *RMSEA* < 0.10, and *GFI* > 0.90 (see Figure 2). Therefore, the fifth hypothesis (**H5**) was supported by empirical data. Based on the coefficient of determination (R^2) in the equation of regression, the results are (1) the simultaneous contribution of ego identity components to the perceived uncertainty is 42% (Table 3); (2) the simultaneous contribution of perceived uncertainty and perceived behavioral control to attitude on medical surgery is 21% (Table 4).

However, in the model, there was one insignificant correlation, which is between ego identity-exploration and perceived uncertainty (*T-value* < |1.96|). The absence of the correlation did not support the second hypothesis (**H2**), which assumed the negative correlation. Besides, it was found that the perceived control behavior correlates negatively with attitude toward medical surgery. The negative correlation did



Chi-square = 3.47; df = 3; *P*-value = 0.32499; *RMSEA* = 0.041; *GFI* = 0.99
Note: numbers on the arrows signify *T-value*.
Significant correlation (*T-value* > |1.96|)
Insignificant correlation (*T-value* < |1.96|)

Figure 2. Results of Path Analysis

Table 3. Multiple Linear Regression Analysis Predicting Perceived Uncertainty (*n* = 99)

Variable	β	*SE* β	*T-value*
Ego identity-exploration	-0.210	0.430	-0.490
Ego identity-commitment	-1.580	0.190	-8.170*

Note. R^2 = 0.42; **T-value* > |1.96|; *Error variance* = 99.32

Table 4. Multiple Linear Regression Analysis Predicting Attitude toward Medical Surgery (*n* = 99)

Variable	β	*SE* β	*T-value*
Perceived uncertainty	-0.230	0.068	-3.470*
Perceived behavioral control	-0.078	0.024	-3.300*

Note. R^2 = 0.21; **T-value* > |1.96|; *Error variance* = 73.48

not support the fourth hypothesis (**H4**), which assumed a positive correlation.

This research found that attitude toward medical surgery is influenced by perceived uncertainty in a negatively predictive direction (β = -0.230, *T-value* > |1.96|). This means that the higher the perceived uncertainty, then the more negative attitude toward medical surgery (supporting **H1**). Fox (in Lingard)[30] stated that there are three sources of uncertainty: (1) limitations of an individual's knowledge, (2) limitations of knowledge in the field, and (3) the challenge of distinguishing these two.

Regarding these research results, there are two things that need concern. The first thing is the possibility of the patient's lack (or, absence) of knowledge about the ins and outs of medical surgery (for example, surgery procedures, anesthesia, imagination of surgery outcomes, and pain management[31]). The second thing is the patient's negative assumption about the efficacy and advancement of the medical academic and professional world in dealing with his/her illness. This also explains particular expressions expressed in society, like "Medicine is not everything," and "Medicine does not always solve problems." Nevertheless, Fox also added that patients frequently mix them up. In other words, patients might not be able to tell whether their perceived uncertainty is due to their scanty knowledge or to their subjective perceptions toward the medicine capability. In this regard, doctors, nurses, and psychologists could help by encouraging patients to have self-introspection in unraveling these complexities, and later clearly positioning the more dominant factors, and finally solving them through cognitive intervention in order to increase the degree of perceived certainty so patients could have a more positive attitude toward medical surgery.

However, in academic debates, a number of experts have stated that uncertainty and ambiguity are already inherent in the medicine world.[32-34] Uncertainty and ambiguity are synonymous and contain a similarity, which is the perception toward the situation (in this research context: surgery condition) as a source of threat and anxiety; however, uncertainty is more concerned with future perspectives, while ambiguity is more concerned with present perspectives.[35] Geller et al. (p. 619) stated in their Research Note: "The practice of medicine has always been characterized by uncertainty."[34] Therefore, the practical suggestions given should not only increase the feeling of certainty, but also—in certain facets or aspects of the patient's attitude and decision making toward medical surgery—heighten the patient's acknowledgement, acceptance, and comfort toward uncertainty and ambiguity. The generalization of the statement must be done carefully due to the ethical implications of the defensive justification that, "If the medicine world is as uncertain as the non-medicine world, why then choose the medicine world?" In order to respond to those questions, for certain things, the patient's perceived certainty should be increased as comprehensively and intensively as possible based on state-of-the-art medical science. On the other hand, the patient's acceptance of uncertainty must also be strengthened. That kind of acceptance must be treated as the representative of the humility in academics and medical professions, especially for surgery problems that are not yet solved in the medicine world. The dynamics of the whole debate is well put by Baines, who stated, "Unnecessary uncertainty is unacceptable."[36]

The research found that the commitment component of ego identity influences the perceived uncertainty in a negative direction (β = -1.580, *T-value* > |1.96|). This means that the higher the commitment component of ego identity, then the lower the perceived uncertainty; on the other hand, the lower the commitment of ego identity, then the higher the perceived uncertainty (supporting **H3**). The commitment toward identity is the reducing contributor to the perceived uncertainty, which further increases the positive attitude toward medical surgery. The explanation of the finding is as follows.

The ego identity-commitment is known to be positively correlated with clarity, steadiness, self-concept consistency, emotion stability, and psychological well-being.[37] Shanahan and Pychyl also explained that the high commitment toward identity contributes to the capacity of self-regulation and direction, greater mental resources dedicated for executive function of ego, and the ability of showing reliable and predictable behaviors.[16] Such quality of ego identity-commitment is the reverse quality of features and characteristics of uncertainty and ambiguity. Therefore, the negative correlation between ego identity-commitment and perceived uncertainty toward medical surgery can be understood.

The research has also found that the exploration component of ego identity does not influence the perceived uncertainty (β = -0.210, *T-value* < |1.96|). This means that the highs and lows of ego identity-exploration do not increase or decrease the perceived uncertainty (not supporting **H2**). The explanation is as follows. Unlike the commitment that has positive impacts, exploration has two kinds of influences, positive and negative. Exploration has indeed positive consequences, as it shows the active and responsible processes in self-identity discovery, can therefore be called an adaptive process. Nevertheless, in-depth exploration can also be maladaptive, because the process of continuous evaluation and excessive contemplation could make a person in an indeterminate state, absence of belief, and skeptical about the choices made, and possibly end up in a depression.[37] Therefore, it is not surprising that these two influences (adaptive and maladaptive) confuse the correlation direction, so that there seems to be no correlation between ego identity-exploration and perceived uncertainty toward medical surgery.

The research has also found that the perceived behavioral control in fact correlates negatively with the attitude toward medical surgery (β = -0.078, *T-value* > |1.96|; not supporting **H4**). This means that the more confident a patient is in dealing with medical surgery, the more negative his/her attitude toward the surgery. On the other hand, if the patient's confidence level is low, then the more positive his attitude would be. This has shown the weaknesses of the Theory of Planned Behavior (TPB), which is adopted into some parts of the research hypothetical scheme. TPB assumes that humans are fully rational creatures. Trafimow and Finlay (p. 84) elaborated the criticism toward the assumptions of Ajzen's theory by stating:[38]

"*The contrary evidence that we obtained contradicts … the basic notion that people are logical … This is not to say that people are necessarily irrational. It is possible that people do the best they can with limited cognitive resources (which would be rational), and that these limited resources preclude the possibility of forming attitudes on a strictly logical basis. Or, it is possible that people are capricious: they may simply like positively framed beliefs better. However, whether or not the process of attitude formation is rational, it is clearly not logical*."

The statement by Trafimow and Finlay above is in line with Robinson and Clore's research,[39] in which they stated that emotion is different from perceptual belief. Attitude (which is more inherent with affective or emotional nuance) is episodic, experiential, and contextual; while belief or perception (like perceived behavioral control, which is more inherent with cognitive nuance) is semantic, conceptual, and decontextual. By this, it can be understood that inconsistency might exist between cognitive perception and attitude. At the macro level, inconsistency symptoms of negative relationship between belief and attitude have ever been indicated in the research by Schernhammer et al.[40] They examined survey data, which have the following two questions: (1) "Is cancer curable?" and (2) "What is the most important thing to cure cancer?" Interestingly, on the alumni data of primary school (more than 1,000 participants as sample), there was an increase of the number of respondents who believe that cancer is curable, which grew from 54.3% in 1995 to 62.7% in 2005. However, within the period, there was a decrease of favorability toward things viewed as the most effective cancer healer (early detection, doctor visits, and alternative medications). For example, favorability toward early cancer detection decreased, from 76% in 1995 to 75.2% in 2005. Likewise, there was a decrease of favorability toward doctor visits from 45.7% in 1995 to 37.4% in 2005, and a decrease of favorability toward alternative medication from 27.8% to 24.0%.

The second reason that explains the negative correlation between perceived behavior control and attitude toward medical surgery is the phenomenon of underestimating self-control over behavior, so that under-reporting may happen in the questionnaire of perceived behavior control. In other words, in relation to perceived behavior control, the positive attitude seems to derive from the low perceived behavior control. The symptom might be due to the patient's conditions of feeling "surrendered," "destiny-bound," "nowhere to run," and "without any choice."[41] Daily observations also show that in Indonesia, the decision to have a medical surgery very much depends on family, either economically or psychologically. However, this still needs further research.

Conclusions and Suggestions

The research concludes that for patients dealing with the option of medical surgery in Jakarta, the element of ego

identity-commitment plays a significant role in developing the positive attitude through the mediating variable of perceived uncertainty toward medical surgery. The ego identity-commitment would decrease the perceived uncertainty, and the decrease of perceived uncertainty would increase the positive attitude toward medical surgery. This confirms the thesis that ego identity plays a role in health psychology.[42,43] Therefore, health education, formally or informally, needs to integrate materials of ego identity from the beginning, so that in the future the ego identity-commitment could facilitate the attitude and decision making in a particular situation in which a person experiences the perception that his physical body is being "threatened" by medical surgery.

Based on the findings and the conclusion of the research above, health workers need to be always aware of the fact that the patient is a human who has a range of attitude possibilities that will constitute his decision in the sense of his well-being. The attitude is the result of the complex psychological dynamics embracing ego identity dimensions and perspectives on uncertainty. Health workers could take a practical benefit of this research by encouraging patients to deliberately revive or reawaken their memory saliency on their ego identity, and thus strengthening the commitment toward their identity. This hopefully stimulates further effect of a more established and steady perception toward medical surgery. This will result in a positive attitude. Strengthening the commitment toward identity refers to intensifying the identity within an individual's self until a crystallization of his true self is achieved.[44] Having his identity strengthened, an individual would have a more stable sense of purpose. All of his aspirations and behaviors will be organized around his sense of purpose. Empirical research has also shown that a sense of purpose improves life expectancy.[45] Therefore, strengthening commitment toward identity would facilitate the patient's attitude and behavior to take care, maintain, and lengthen his life, i.e., through medical surgery for an illness that needs medical intervention—via the mediation of the reduction of perceived uncertainty about the value and meaning of surgery. Regarding these, the research results of Soenens et al.[44] had also inspired us that the patient's surrounding context needs to be manipulated in such a way that it could flourish the appropriate motives for strengthening the patient's commitment toward his identity, i.e. autonomous motives (psychological freedom, competency, and social relation) over control motives (external pressure avoidance; feeling alienated, shame, and guilt). The right motives for reaching the future would secure the patient's positive attitude toward medical surgery.

Another thing that needs to be investigated is the absence of correlation between ego identity-exploration and perceived uncertainty. How should "commitment without exploration (or even: with too-deep exploration)," "commitment without an identity crisis experience (or even: with never-ending crisis)" be viewed? Do such conditions have, in fact, a valuable uniqueness within the context of health psychology of Indonesian people? These questions need to be answered by other researchers. These research findings together with their discussions also invite the next researchers to investigate mediator and/or moderator variables, either demographic or socio-psychological variables, between the perceived behavior control and attitude, which might change the correlation in a reverse direction. Further research is needed on the predictive correlation between perceived behavioral control (cognitively based) and attitude (affectively based) toward medical surgery, which was found to be unexpectedly negatively correlated in this research.

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