

# Reconsidering Theories and Models of Specialty Preference: A Critical Review

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## Abstract

**Background:** Choosing medical specialties by physicians is important in workforce planning of health care services; yet there is not enough theoretic understanding about how medical specialties are chosen. So the key concepts of nine theories have been the basis of the present study.

**Methods:** In this study the Critical Review methodology, Carnwell and Daly structures and the three steps proposed by Schutz were used.

**Results:** While we criticize the work of each theorist with a casual sequence of effective factors on the chosen career in each theory, we have tried to design a comprehensive Meta model for specialty choice by investigating and synthesizing available theories.

**Conclusion:** This model has remarkable advantages to other presented models and related context to explain factors affecting career choice. Since it includes all elements concerning career choice, it can be used as the basic tool to identify professional interests, help choose a career effectively and provide critical information for policy- makers for the effective management of physician workforce in different specialties and different regions in the country.

**Keywords:** SPECIALTY CHOICE, THEORIES, CAREER PREFERENCES, CRITICAL REVIEW

*Journal of Medical Education Spring 2018; 17(2):120-132*

## Introduction

The identification of career preference and intended practice locations of the medical graduates helps understand the needs and distribution of doctors across different specialties and regions in the country. Career choice is a complicated personal decision that is affected by various factors (1). Therefore, knowing people's criteria for choose a medical specialty may provide information on the nature of the decision making process that this information may be important for health care

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system leaders because choosing a specialty determines the future composition of the physicians' workforce (2).

Medicine offers many more choices to its professionals than any other profession (3), so it is hard for medical students to choose their specialty. Moreover, choosing a specialty has long term results and unlike nurses and other health professionals, physicians cannot change their careers easily (4).

Physicians choice of specialty, plays a significant role in workforce planning by healthcare services, yet there is little theoretical perception on how medical specialties are perceived, how they are chosen and what outcomes they have for the physicians and the healthcare system.

In this study, we have attempted to investigate

and synthesize the theories in this field by designing a comprehensive meta model for career choice. Several related theories exist to explain the factors affecting career choice and the theoretical frameworks to explain how choices are made. But for the purpose of this study, the key concepts of nine theories were the basis of study and while we offer a critique from each theorist's work, we confirm that developing our way of thinking and ultimately developing and presenting the career choice analytical meta- model has been completely dependent on the mentioned factors and stimuli

proposed by these theories.

## Methods

In this study critical review methodology and structure of Carnwell and Daly (5) and the three steps proposed by Schutz (6) was used (Table 1).

**Purpose:** Our aim was critical evaluation and synthesis of theories related to career choice, to identify and extract the causal factors that influence the choice of occupation/specialty to achieve conceptual originality and sufficient

**Table1:** Theories and their contributions

Row	Theories	Theoreticians	Contribution to the formation of the concept
1	The Myers – Briggs Type Indicator (MBTI)	Isabel Briggs Myers and Katherine Briggs(1950)	For the first time, considered the link between personality, choice and job performance.
2	Holland's theory of vocational personalities	John Holland (1959)	Described the reflection of the personality of the person on the world of work.
3	Attachment Theory	John Bowlby (1907-1991) & Mary Salter Ainsworth (1913 )	models of attachment play a role in shaping personality and lead to behaviors such as career choice in childhood and adolescence through experiences and interpersonal relationships.
4	Self Determination Theory (SDT)	Richard Ryan & Edward Deci (2000-2002)	Pointed out to the role of motivation in career choice.
5	Social cognitive career theory (SCCT)	lent , Brown & Hackett (1994,2002) lent 2005	The three main variables of self-efficacy, outcome expectations, and personal goals determine career interests, career choices, and performance and career stability.
6	Choice Theory	Glasser (1998)	The purpose of each individual's behavior and career choices is to satisfy five essential needs (survival, belonging and love, power, freedom, and entertainment and pleasure).
7	Games Colman et al. (1970)	Games Colman et al. (1970)	Individuals' employment at different businesses is a logical consequence of people's willingness to exchange, which is the source of personal gain and maximize profits.
8	Thaibaut & Kelly (1959), Homans(1961) &.....	Thaibaut & Kelly (1959), Homans (1961) &.....	Social exchange means individual rewards and benefits as a reason for a social relationship and job selection with the aim of minimizing costs and maximizing rewards.
9	Brim et al (1962) John Deyoii (1910-1978), Herbert Simon (1960) & .....	Brim et al (1962) John Deyoii (1910-1978), Herbert Simon (1960) & .....	Choice is a decision/target-driven behavior in the presence of related options to produce the desired outcomes.

theoretical understanding of how se medical specialties are chosen.

**Scope of the review:** The search for texts includes theoretical texts on career choice and the texts and articles published in scientific journals that have criticized these theories.

**Search strategy, Inclusion and Exclusion Criteria:** The literature search was done in two phases in PubMed, Embase, Google scholar, Emerald, Scopus, Science Direct and Google general explorer databases.

1. Finding theories of career choice: Search terms included “career choice theory, vocational choice theory, vocational choice, vocational development theory, career decision making, theories of vocational behavior, decision making theories, and career preferences theories”. Also the following concepts were searched using OR and AND in combination with the main concepts: “Medical student, specialty choice, and residency”. Finally, the nine theories on the definition and interpretation of concepts, components and other factors influencing career choice were selected.

2. Searching available documentary texts for all the theories that had reviewed and criticized each theory: search terms included

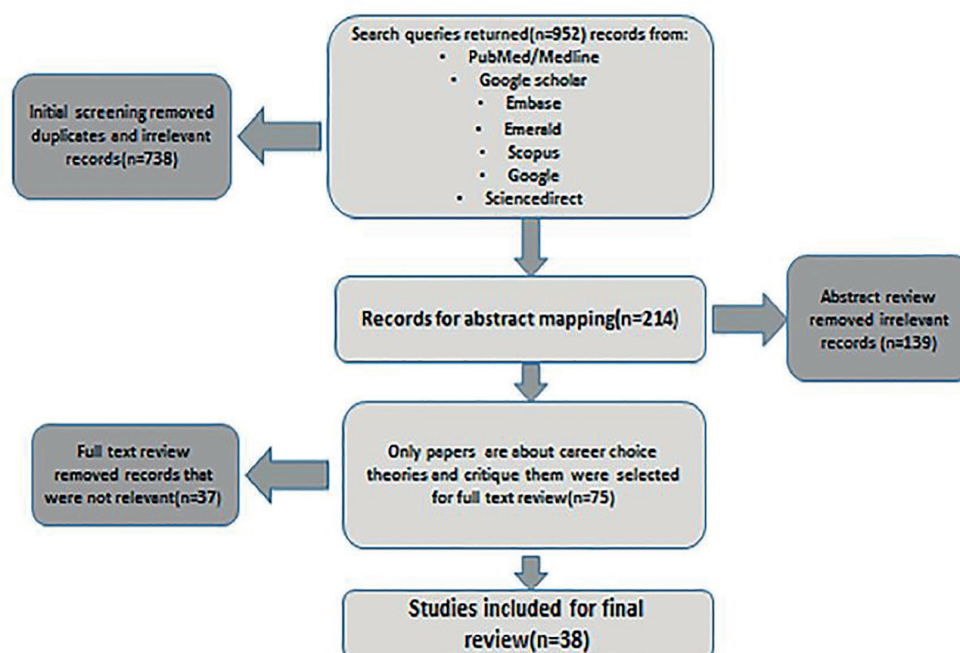
the main concept of theories, using AND in combination with “critique, challenges, problems, shortcomes, advantages, and disadvantages”.

**Inclusion criteria:** studies were included based on their relevance to research objectives, the amount of referral, with more conceptual richness and in those that were in English without any time limits.

**Exclusion criteria:** Literature that were not in English and not related to career choice theories were excluded.

**Search results:** 952 articles were initially retrieved for review. Title and abstracts were reviewed and studies on career choice theories and their critical appraisal were selected. So, in the next stage 75 papers were retrieved. Of these, 34 were irrelevant and 3 were unavailable, leaving 38 papers for full-text review after consensus (Figure 1).

**Analysis method:** To study, critique and analyze theories, Schutz’s (6) proposed three steps were used: in the first step, theories were introduced. In the next steps, criticisms of the texts were presented in relation to theories and then the critique of the researchers themselves were presented. Theories were criticized based on their conceptual contribution.



**Figure 1:** Method flow-chart

## Results

The Myers- Briggs Type Indicator (MBTI) of Isabel Briggs Myers and Katherine Briggs (1950)

MBTI is a self-reporting questionnaire based on the personality theory by Carl Jung. Myers believed that different careers are created from different personality directions and Jung theory has created theoretical links between personality and professional functions. (7, 8). In spite of its popularity, MBTI has a low test-retest reliability, so that if the test is taken with just a 5-week interval, 50% of people have the chance to be in a different personality level compared to the first test. Therefore based on Myers' and Briggs, the test may give you a viewpoint of "what activities you may enjoy and do successfully" (8, 9).

David Pittenger believed that since there is no reason to show a positive relationship between the types of personalities and success in a career, and lack of data showing that a certain personality is highly satisfied in a career and stays longer in a carrier, it is recommended to be more cautious in using MBTI for consultations (8).

We also believe that MBTI does not predict the performance and satisfaction in a career. MBTI is a descriptive scale that does not say to people in what career they could be successful. Roman krznic suggests that success of the MBTI is fairly caused by alternative identity of horoscopic summaries of personality and continuous marketing (9). Personality evaluation using MBTI is not intrinsically valid or invalid, but the interpretation of the test results is significant (10). Moods, situations free transfers and order of arrivals change or reverse in a person by passing time. Therefore, paying no attention to personal differences in an individual person such as changes in moods and situations is another limitation of the MBTI (11).

We also think that concentration on categorizing people to different personality

types and its effects on medical specialty choice disregards other qualities and unique potentials. Another critique is related to gender weights particularly different weights of men and women in of thinking-feeling scale based on socialization effects which leads to difficulties in comparing men and women with this scale (12). We believe that Myers and Briggs' test is a scale for categorizing and identifying people with a particular preference. This is the specific preference index that measures the amount of clarity in an individual and it cannot completely determine a person's career path in choosing a medical specialty.

### *Holland's Theory of Vocational Personalities, John Holland (1959)*

Holland believed that one makes career choices by searching for conditions satisfying his adaptive orientations. He described the core of this theory as the reflection of the individual's personality on the work world. Behavior is determined between personality and environment interaction and people who work in environments similar to their personality types are more likely successful and satisfied (13).

Arnold believed that Holland's different types of personalities have failed in considering some personal differences that are important in some career choices. Career may be a misconception of the environment. Separation between the person and the environment may be fictitious. Environment may have not been evaluated accurately and carrier demands often change (14).

This theory has been criticized remarkably due to lack of complete explanations of how people are categorized in their personality types. Lack of career analysis under the influence of socioeconomic environment has proved Holland's psychological career theory useless (15). Consistent with other critics of this theory we believe that career is unpredictable under the influence of unplanned events and different elements during the lifetime. Career choice

process like medical specialty choice is a complicated process that is affected by multiple factors and Holland has neglected them in the career/specialty choice. Researches have revealed some differences in results or scores of RIASEC (Realistic – Investigative – Artistic – Social – Enterprising -Conventional) in demographic groups with strongest connection with gender. Men tend to get higher scores in realistic measurements than women and women tend to get higher scores in social measurement than men (16).

Also, in medical specialty, the RIASEC may not be adequately precise for predicting a specialty. they may be accurate to differentiate between the physicians working in primary care specialty and the physicians working in surgical specialty and its branches (17). Despite Holland's claim that some careers tend to tolerate people with different talents, interests and values; most medical specialties and sub specialties attract students from all types of personalities (18).

we believe Holland's career categorizing can be useful for consultations with medical students. Based on this theory it is generally possible to evaluate work environments as a result of career requirements to choose people and it helps people choose their careers and a specialty with general interests, but this theory is not accurate in determining compatibility of a specific personality with a specific specialty.

### *Attachment Theory, John Bowlby (1907) and Mary Salter Ainsworth (1913)*

Theory of attachment presents a set of primary scaffolding to build a meta perspective that merges emotional and interpersonal dynamics with making links between learning and past experiences and today's performance (19-21). One of the strengths of attachment theory is that it infers each definite behavior concept according to the cultural, developmental and communicational environment regardless of whether or not the environment or the behaviors remain the same way throughout

growth and development (22). In this theory, there is a significant attachment among primary relation perceptions with mothers and clinical qualifications, interpersonal relationships and attitudes but not in primary relationships perceptions with fathers (23).

Researches have proven that attachment styles of healthcare providers can affect career satisfaction. medical students choose primary care specialty, securely attached because they fit into places that need environments with close relationships between patients and healthcare professionals (24, 25), while healthcare providers have more symptoms of burn out and lower career satisfaction, insecurely attached (25, 26).

It has been assumed that evaluation of communication styles using the attachment theory may be a helpful method for medical students to choose their specialty (25). We believe that identifying attachment styles of Physicians and guiding them with different attachment styles, can help them choose the specialties that they are satisfied with.

Attachment behaviors change by age and form with experiences and relationships, so the roles of educational planner and clinical professors are significant in directing appropriate experiences and relationships and specialty choices of medical students because cognitive growth and continuous social experiences develop internal working models and guide a person to his choices in different stages of life.

### *Self-Determination Theory (SDT) Richard Ryan and Edward Deci (2000- 2002)*

Self- determination theory is a motivational theory. In this theory it is assumed that internal and external motivation depends on how much they obtain external values and sources and are changed into self-regulation, beliefs and styles. Behavior regulation and relative cause of a person's behavior is consistent with the type of motivation (27).

Kusurkar demonstrated that, Strong career motivations or higher internal motivations

have been independent predictors of the specialty choice (28). Klein believes that, since a main reason to change specialty choice is the variables of life quality, the perceptions of medical students from their future lifestyle may affect relationships between the level of empathy, motivation and a specialty choice (29). Internal motivation is often emphasized by women and external motivation by men (30). Our argument is that gender should not be neglected. Despite the role of men in their lives, their personality traits cause medical students to be motivated mainly by financial reasons, social prestige, and interest in science in choosing their specialty. but female medical students are motivated by a desire to help people, chances to work with people, practicing personal skills and the balance between professional and personal life.

Motivation in a medical student to choose a medical career may be affected by a variety of factors in the student, learning environment family structures, salary and job status, race, religion, environment and personal research method. Therefore, while accepting and confirming William and co-workers' belief that "people experience healthy learning and growth and meet their needs depending on whether the environment support their needs for autonomy, competence, and relatedness or fail them"(31), Ryan and Deci have proposed that three basic requirements are intrinsic and perception of these three requirements helps internalize their motivation, they have forgotten that motivations in medicine change under the effects of different factors such as limitations in healthcare system, debts and loans, prestige, lack of income, lifestyle, etc. (27).

### *Social Cognitive Career Theory (SCCT), Lent (2005), Lent Brown and Hackett (2002)*

The social cognitive career theory is rooted in Bandura's self-efficacy theory. Self-efficacy can be defined as a dynamic set of beliefs that link with particular functional actions and aspects (32). SCCT choice model refers

to career goals and choices as the functions of interaction between self-efficacy, outcome expectations, and interest over time (32).

Rogers and colleagues, believed that "SCCT emphasizes on the methods by which people practice their personal missions in the process of career development and identifies a variety of personal environmental and behavioral variables that play a key role in developing interests, abilities, goals and career choice" (4). We have no protest to the totality of Roger's theory, but career development is not just a cognitive or voluntary action and there are often strong obstacles to choose like changes, growth, informed experiences, excitement, culture, gender, genetic conditions, social, cultural, and economic considerations, health conditions, etc.

In specialty choice, inherent genetic differences, learning ability differences, learning atmosphere, curriculum, performance environment, and the experiences that a person acquires, all affect choice behavior and this theory is criticized because of neglecting these differences. This theory tends to neglect the puberty and development stages over time and give no explanation how motivation or personality change over time and affect people's choices.

### *Choice Theory – William Glasser (1998)*

Choice theory believes what we do is our behavior and all our behaviors are stimulated from within us and are focused on the goal. The goal of each behavior is to satisfy one of the basic needs (need for survival, need for attachment and love, need for power, need for freedom, need for entertainment and pleasure). This theory explains how we make choices to get what we want. Internal motivation and general behaviors are two basic elements of choice theory (33).

The helpful philosophy of this theory which says "what we do is our behavior, our behaviors are focused on a goal and all behaviors aim to satisfy a need" is logical and dominant in

most life processes.

Zergent belief that most behaviors are already chosen acknowledges this fact. If we behave on the ways that meet our needs we can improve our communications and consequently we create joy (34). On the other hand, there may be different choice behaviors for achieving a goal that each one is proper for a certain person and it is not understandable except by trial and error because people are different and we cannot generalize one method to another person. Trial and error require wasting time and unrepeatable opportunity and sometimes an inappropriate choice affects a person's whole life.

Louis, found out that choice theory is convergent with the theory of Vygotsky and enables social interaction and scaffolding. He pointed out that achieving these needs will bring joy and pleasure, so excitement is a main part of satisfying our needs and also a main element of learning (35).

Assor and Katz have divided choices into autonomy enhancement choices, competency enhancement choices and relatedness enhancement choices. They mentioned that choices must be real not forceful and the number of choices must be limited (36). We think it is different from the choice theory, which is the only determinant of our current behaviors. This theory neglects the effects of external controls on people. Different researchers have shown that different factors such as parents, peers, past experiences, cultural and social determinism, values and beliefs, race and ethnicity affect specialty choice and are sometimes inevitable.

### *Rational Choice Theory, Macnur Olsun, Michael, Robert Axelrod, Games Coleman, Jon Elster and Gary Becker (1970)*

The most important source of the rational choice theory from expert viewpoints, is classical and neoclassical economics (37). This theory is rooted in instrumental rationality. An original person is someone who chooses the

most favorable outcomes when he faces two choices with the same outcomes (38).

From standard viewpoint, rational choice is defined as what choices are available then the most preferred choice is made based on some fixed criteria. this theory is now an approach based on utility. This theory is based on the belief that all human behaviors are directed by the interpretation that a person has his best performances. Each person evaluates his behavior with the value of that behavior which is a function of rewards minus the costs (39). One of our challenges is that this theory does not explain why most people accept and follow the norms that encourage them to act in a manner that gives them a sense of coercion and commitment that is the opposite of their own personal interests. To Levin and Milgram maybe the most critical criticism of this theory is that the real world choices are situational and dependent on environment. It is obvious that the way by which a choice is made, social environment of a decision, excitement of a decision maker plus external factors are effective on a choice behavior (39). We believe that the costs of collecting data, stress and time pressures, misunderstandings and organizational structures are also effective on making rational choices. In the other words in rational choice theory it is stated that goals are known and predetermined or so obvious that goal setting can be easily performed ,but in real-world decision-making, goals are rarely known and certain, and, on the other hand, are governed by different conditions. Many people have claimed that rational choice theory is dependent on economic factors because this theory has initially modeled people's utilities in economy concepts. Showing that people do not choose based on economic preferences does not indicate that they do not choose rationally but it means that they are solely not motivated by economic benefits (40).

In line with the reasoning of Quackenbush, although part of the view of this theory to human nature is economic view, one of the most important criticisms of this theory is that

it has neglected the role and effect of feelings and emotions in human decision-making and also values and beliefs (38).

### *Social Exchange Theory (SET), Thaibut and Kelly (1959), Homans (1961), Emerson (1962), Blau (1964)*

SET suggest that a social behavior is the result of a process of exchange. The aim of this exchange is to maximize the benefits and minimize the costs. Costs-benefits analysis, paying attention to possible solutions and duration of a relationship play a significant role in the process of social exchange.

As a strength, this theory helps understand the costs and benefits of the relationships and predicts how to maintain relationships (40). This theory causes people to seem rational and look for benefits, so this is a weakness that cannot be neglected (41). West and Turner, have suggested that the problem of social exchange theory is in its basic concepts, cost, and benefits, that have not been clearly defined (42). SET has been limitedly used in medical specialty choice, there are no reliable evidence by which we can evaluate the operationally of this theory reliably and credibly.

### *Decision Theory, Brim et al (1962), John Dewey (1910- 1978), Herbert Simon (1960), Condorcet (1743- 1794)*

Decisions have been defined as actions designed to create desired outcomes and choice is a kind of decision that a person chooses from two or more solutions. Decision theory is concerned to directed behaviors by goals in presence of choices and rationality is a key concept in the decision theory (43). Teachers and researchers hope that understanding the effective factors on a specialty choice provide clues for better effective methods like future choices. A more comprehensive view point is using decision theory in order to understand how decisions are made, providing data about the quality of decisions and improving the

decision-making process.

Reed and colleagues, believe that the strategies aiming to try to improve the decision-making process of a specialty choice must be focused on three sections: a) The knowledge of special factors with a specialty. b) focus on the improving the specialty decision-making process. c) improvement strategies must longitudinally identify students' follow-up needs and use a specialty choice stability as an evaluation of the effectiveness of the strategy (43).

One of the critiques to the decision theory is that access to information and knowledge for decision making is sometimes impossible and too difficult. Since medical specialty choice is a complicated process and there are wide choices for medical students and many factors affect specialty choice and its decision-making process, decision-making strategies in these people are really accompanied with a lot of challenges and it is vital to identify and research about the real processes that students used in decision making. Therefore, creating focused balance among different specialties, policies and macro educational planning should be in ways that the best choices by students lead to the best outcomes in a specialty distribution.

## **Discussion**

This study by investigating and evaluating the theories related to medical career choice phenomenon has tried to get a basic insight of the affective factors in the raised theories. Therefore the theories of career choice have been carefully analyzed, criticized, and synthesize to get more information about the affective factors on career choice so what will finally be offered is our suggested model based on the examined theories. In this study nine theories of career choice and development, have been examined and criticized which include Holland career development theory, MBTI, attachment theory, SDT, SET, Choice Theory, Decision Theory and SCCT (Table 1). By investigating the theories we believe that



there are differences in theories and their emphasis on the effective factors on career choice and we believe that the adequacy of each theory in understanding and facilitating choice and career development help us in understanding the structures related to career development and choice. In other words, the strengths of the theories are in their general explanation about the method and process of career decision making. The analysis of the theories suggested that one of the most important factors affecting the career/ specialty choice is personality traits. Although there are many factors which affect participant behaviors, values, and attitudes, but many of the choices and behaviors are caused by their personality traits that are effective in increasing understanding and improving personal effectiveness in carrier environments compatibility with others, effective communications and achieving satisfactory outcomes.

According to Myers, different careers are ideal for different personality orientations. Based on MBTI theory the personality profile of each person can have a helpful role in predicting a person's behavior styles and choices. In other words, Holland's theory suggested that a person's personality shows his career interests and his personality traits can be identified by his preferences and choices. Holland has explained the main core of his theory as the reflection of the individual's personality and their world of work and indicates career choice as an action that shows the motivation, knowledge, personality, and abilities of a person. the key structure in this theory is consistency between the person and the environment and career choice behavior is determined with the interaction between personality and achievement. As Nauta noted that, there is strong evidence that congruence predicts individuals 'choices of and persistence or stability in college majors and occupations (16) .

Along with these, it is obvious that proper primary relationships and person's attachments

and the effects of primary communications on personal growth and development and creating securely attached styles predict people's personality traits including interests, self-confidence, relationships to peers, how choices are faced and life events that were mentioned in the theory of attachment. AS Ciechanowski and colleagues stated, assessing relationship styles using attachment theory may be a potentially useful way to understand and counsel medical students about specialty choice (25).

It can be concluded that people's differences in personality traits and behaviors are the theoretical organizers of people's interests. They reach their peak in predicted methods in different situations and are evaluated by the components of interests. Therefore in career choice along with other factors personality traits offered by Holland's Career development theory, theory of attachment and MBTI can be the basis and determinants of people's career interest and career choice.

Also a person's expected capability in playing a particular role can be effective on his career decision-making because expected capability is connected with the self-efficacy mentioned in the theory of social cognitive career theory (SCCT1) that means a person's belief in capability is connected with completing a task in which career choices were mentioned as their function causes by the interaction between self-efficacy, outcome expectations and interest over time and include the primary carrier choice, actions aimed at achieving individual goals and performance experience, which is a feedback to the individual about his competence to achieve that goal and choice. Achieving a proper career choice based on self-efficacy and expected capability leads to expected outcomes (SCCT2) connected with the career in a person. It means a person chooses a behavior or a particular action based on choice theory to meet his basic needs. Career choice aims to satisfy the mentioned needs that are generated in a person's mind and also the origin of these behaviors, choices

and motivations are internal events. In fact, a person pursues a hierarchical framework to conduct his actions to achieve the expected outcomes and believes that he is able to complete a task and expect the outcomes. He chose his expectations, thoughts, beliefs and actions so that he can achieve the best and the most pleasant mood. His behavior reflects his beliefs and it's the result of his choice. Eventually he will most probably achieve the expected outcomes at the career level. These outcomes are often proximal and introductory and career related and another effective factor on career choice.

Achieving the career related outcomes, satisfies the need for competence and the desire to feel effective in that activity and satisfaction of these basic needs boosts the internal motivation in order to be interested in a career and is eventually a stimulus to stay in a career and be satisfied with it (SDT). Kusrkar found that strong career motivations or higher internal motivations have been independent predictors of the specialty choice (28).

It is obvious that in analyzing the studied theories we have tried to consider the theory synthesize with the viewpoint of output-impact to finally achieve their desired and reliable results and the analytical model leads us to our ultimate goal in the best way. The results of career choice and choosing a proper job which are the important roles of a person's life always have roots in a person's tendencies to maximize his personal profits.

It is assumed that a person evaluates his

behaviors with the value of the behavior which is the function of benefit minus the costs (rational choice theory) and makes choices according to his personal goals (SCCT3) to achieve his related outcomes.

Therefore, achieving life related outcomes is another effective factors on career choice which includes social participation, personal development, health, attachment, reputation, situation, authority, money, etc., which activates and effects internal and external motivations and career interests.

Finally, a person makes a choice by evaluating solutions, choices and options and effects that a decision and choice leaves and examining different situations and evaluating solutions and probabilities, considering desirability and utility and choosing a solution with the highest utility rationally (decision theory) as a result of the exchange process which aims to maximize the benefit and minimizing costs (SET) and based on exchange rules and intake interaction which allows a person to be more reliable and feels more application and committed to their relationship and considering rationality, altruism, collective benefits, and competition in interpersonal exchange as he tries to achieve quality and ultimate utility in life. Undoubtedly utility is the result of correct and proper choice and increases a person's motivation and career interest, satisfaction, and staying in the chosen career which is one of the most important factors contributing in career choice.

This study synthesized and examined related theories, and provides preliminary evidence

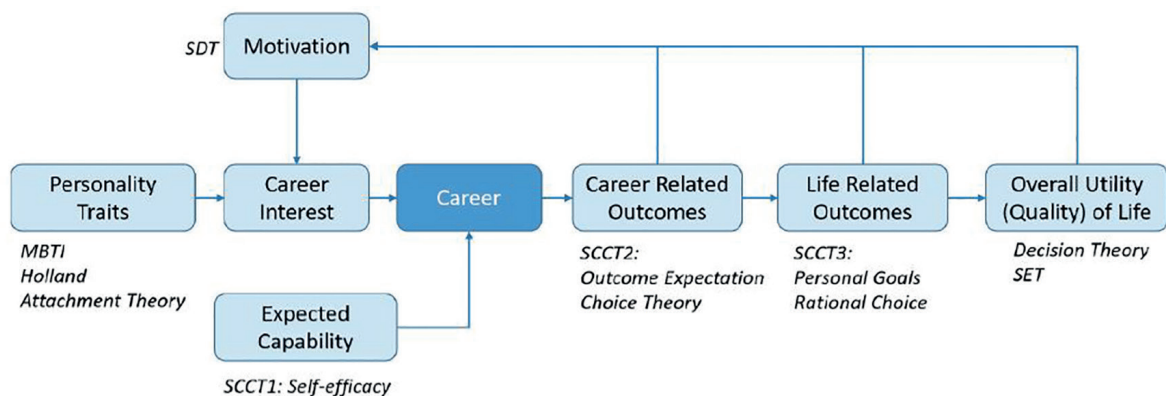


Figure 2: Meta Model of Career Choice

for career choice in the form of an analytical meta-model because experimental and research evidence indicates that there are many factors besides mentioned theoretical approaches. (Figure 2).

## Limitations

One of the most important limitations of this study was that similar to all critical-review studies, there are some aspects of subjectivity in this study, which limits the repeatability of the results or resulting model for a reviewer that intends to use this model.

## Conclusion

As it was raised, each of the examined theories have actually considered a casual sequence from the effective factors on career choice. A proposed analytical meta-model in this study has shown the formation of a specialty choice in a structured way. This model has considerable and clear advantages over the other models suggested in the related texts to explain the effective factors on a specialty choice. Since it includes all elements concerning a specialty choice, it is rational that it can be the basis of a tool in order to identify professional and disciplinary interests.

## Acknowledgment

This study was extracted from a PhD dissertation approved by the Ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RETECH.REC.1395.152, dated May 8, 2016).

## Conflict of Interest

The author declares no conflict of interest.

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