Subjective Quality of Life in relation to personality in people with psychiatric illnesses

The influence of neuroticism and extraversion on the three- factor model of subjective quality of life and domain life satisfaction

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Abstract.

Background: Personality traits, especially neuroticism and extraversion play an important role in subjective quality of life. Investigating this topic concerning to people with psychiatric illnesses is important because when knowing the factors and processes that influence subjective quality of life, it could be improved. This reduces costs for inpatient care, because people with a higher subjective quality of life are supposed to be able to live more independent. Furthermore it is important to investigate this topic for people with psychiatric illnesses with the three- factor model by Kim-Prietro and colleagues consisting of the components global life satisfaction, positive affect and negative affect (22). The present study adds the component domain life satisfaction because it represents the current satisfaction with different life domains.

Method: The components of subjective quality of life are measured with three self-report questionnaires: DIALOG- questionnaire, Satisfaction with Life Scale (SWLS) and Positive and Negative Affect Schedule (PANAS) in 19 people with psychiatric illnesses who live in psychiatric residential groups. The traits neuroticism and extraversion are measured with the S- form of the NEO-PI-R. Correlations and multiple regression analyses between components of subjective quality of life and extraversion and neuroticism are conducted.

Results: Neuroticism significantly correlates with and predicts the components positive affect, negative affect, affect balance and global life satisfaction of subjective quality of life, in which the demographic factors sex, age and career add a contribution to the predictive value. Domain life satisfaction, correlates with extraversion and neuroticism.

Conclusion: The present study shows that neuroticism is a main predictor of subjective quality of life and should be taken into account when trying to improve it in adaptive interventions. The concepts domain life satisfaction and global life satisfaction differ because domain life satisfaction seems to be indirectly predicted by the traits neuroticism and extraversion with other factors mediating this relationship, whereas global life satisfaction seems to be directly predicted by the traits neuroticism and extraversion. More research is needed to clarify the concept of domain life satisfaction and its relation to personality.

1. Introduction

1.1 Quality of Life – a multifaceted concept

Researchers were first interested in the concept of subjective quality of life in 1950 concerning the somatic medicine and psychiatry (1), where subjective quality of life is seen as a multifaceted concept. This is obvious in a variety of definitions from 1948 to today. In 1948 the WHO defines health in their constitution as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (2). Baker, Itagliata and Lehman were the first investigators who dealt with the concept quality of life concerning mentally ill people (3- 6). They state that quality of life consists of the following elements: personal characteristics, objective criteria, such as objective quality of life in different areas (work, leisure, social environment, etc.), subjective criteria such as satisfaction with these areas and general quality of life. Diener differentiated subjective quality of life in an affective and cognitive dimension, in which the affective dimension is divided in negative and positive affect (7). Other authors differentiate between global well- being, momentary mood and satisfaction in specific areas (8). A definition that is widely accepted was developed by the WHO – Quality of Life Assessment- Group: "QOL is the perception of individuals of their position in life and in relation to their goals, expectations, standards and issues". In the declaration of this definition, the WHO emphasizes that quality of life is a subjective concept and that it is multidimensional (9).

Although the mentioned definitions of subjective quality of life differ in some aspects, they all have in common that subjective quality of life is seen as a multifaceted concept, that consists of different aspects and criteria of one`s life and well- being. In the development of definitions it becomes evident that today different approaches still exist to conceptualize subjective quality of life. In the following section two concepts of quality of life in a subjective manner are taken into account.

1.2 The importance of subjective assessment

A subjective assessment of quality of life is necessary. This is also evident in the scientific research. The most important finding that supports this fact is that quality of life assessed through an external person is rated lower than through the individual itself, because perception differs between an external and personal assessment (10). Furthermore, there only can be found a small relation between objective life circumstances and subjective quality of life, both within the community (11) as well as for people with mental illnesses (12- 13). However, people who are mentally ill describe their subjective quality of life as relatively good, even if they live under objective deprived conditions (12- 13). Another fact that stresses

the importance to focus on the subjective assessment of quality of life is that there does not exist a consensus between self and external assessment of subjective quality of life (6). Therefore, in the next sections of the present article the term subjective quality of life is used, which refers to the hedonic concept of quality of life.

1.3 Hedonic and eudaimonic quality of life

The concept quality of life can be investigated from two different approaches. First, the concept of hedonic quality of life or subjective quality of life that refers to the assessment of the perception of one´s happiness in life. It contains the components life satisfaction, positive and negative affect (7). Subjective quality of life should therefore be seen as having a high level of positive affect, a low level of negative affect and a high level of satisfaction with one`s life (14- 15). This three- factor structure of subjective quality of life was confirmed by many studies and some degree of independence have been shown between these components (16- 17).

Secondly, there exists the concept of eudaimonic or psychological quality of life. This concept refers to living well and actualizing one´s own human potential that is the personal and social functioning. According to Ryff, this concept originally contains six constructs: autonomy, personal growth, self- acceptance, life purpose, mastery and positive relations with others (18- 19). Several studies confirmed the existence of this six-factor model (20- 21). The present study refers to the hedonic approach of quality of life, because it assesses the subjective perception of quality of life and takes both the cognitive component life satisfaction and the affective components positive and negative affect into account. This approach and models that refer to subjective quality of life are explained in detail in the following sections.

1.4 The theoretic model of subjective quality of Life by Kim- Prieto and colleagues. (22)

Kim- Prieto and colleagues generated a broad model that organizes and gives an overview of the many factors that contribute to subjective quality of life. The original term used in the model is wellbeing. The present study refers to this model but uses the term subjective quality of life instead of wellbeing, because the term subjective quality of life emphasizes the focus on the subjective perception on quality of life and the multidimensionality of that concept. The terms wellbeing and subjective quality of life do not differ in their

meaning and are used for the same concept in the research of social indicators and psychology (22). Therefore, in the present article the term subjective quality of life can be replaced with the term subjective wellbeing and vice versa.

The model of subjective quality of life by Kim- Prieto and colleagues consists of three components: global life satisfaction, positive affect and negative affect that are explained in detail below. This three- factor structure of subjective quality of life was confirmed by many studies (23- 24). The components of this three- factor structure and the relation of them to personality traits is represent in a model in the next section.

Global life satisfaction:

This component refers to life events and circumstances of one´s life and represents the cognitive part of subjective quality of life. It contains the subjective perception of the satisfaction of one`s life in general by a subjective evaluation of life events and circumstances, and is therefore called global life satisfaction (22).

Positive and negative affect

These two components refer to emotional reactions to life events and memory and retrieval of these life events and represent the emotional part of subjective quality of life.

The components contain actual emotions and the remembrance of feelings and emotions of the near past (22).

1.5 Subjective quality of Life – a definition for the present study

The present study uses this three – factor structure of subjective quality of life that consists of the components global life satisfaction, positive affect and negative affect by Kim- Prieto and colleagues (22) as a basis for the model of subjective quality of life that is used in the present study. The present study adds the component "domain life satisfaction" to this three- factor structure.

Domain life satisfaction

The component domain life satisfaction refers to life events and circumstances that are mentioned in the model by Kim- Prieto and colleagues (22). In the model the way to assess life circumstances and events is only expressed by the component global life satisfaction and refers mainly to stressful events that lead to a rapid decrease in subjective quality of life. The

component domain life satisfaction in the definition for the present study refers to the subjective evaluation of the more accurate part of this way to assess subjective quality of life: Life circumstances in the sense of life domains or the present life situation concerning work, health, living situation, free time- activities, social environment, and perceived safety and support. This component is seen as cognitive component that refers to domain life satisfaction, because it assesses the satisfaction with these life domains at present.

This is done because it is assumed that with the component "domain life satisfaction" it is possible to investigate the cognitive part of the concept subjective quality of life more accurately. This is assumed, because the questionnaire used assesses the present life situation and satisfaction with different life domains at present. Benefits of a component that investigates life satisfaction in a more differentiated way are that answers are less influenced by heuristics. Heuristics mean that people in bad mood have the tendency to retrieve negative life events and emotions more often than in good mood. Studies by Schwarz and colleagues confirm these suggestions. They found that questions about subjective quality of life that require a more general answer are more susceptible for being influenced by heuristics than questions that consider the evaluation of different life areas (25). Thus, the evaluation of global life satisfaction is influenced by the current mood of a person. Because of the above mentioned facts the component domain life satisfaction is added to the three- factor model of subjective quality of life for the definition for the present study.

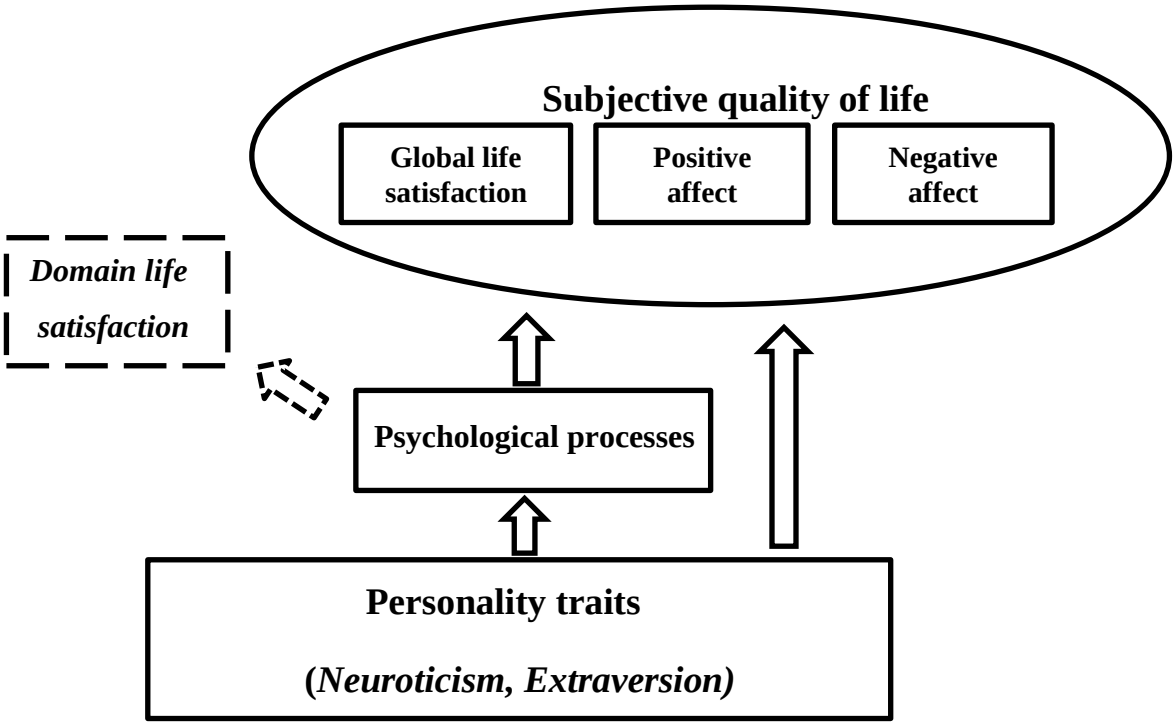
Definition for the present study

Based on the theoretic model by Kim- Prieto and colleagues (22) and studies by Schwarz and colleagues (25), the concept subjective quality of life is defined as follows for the present study: Subjective quality of life is a multifaceted concept that consists of four components- *domain life satisfaction* (life circumstances, domains), *global life satisfaction* and *positive affect and negative affect* that can only be evaluated by subjective assessment of all four components. The described model that is used in the present study is shown below.

Figure 1 represents the model of subjective quality of life and the relationship between components of subjective quality of life and the personality traits neuroticism that is used in the present study. The concept of subjective quality of life consists of 4 components: domain life satisfaction, global life satisfaction, positive affect and negative affect. The place and role of the component domain life satisfaction in the model is not yet clarified and therefore is represented outside the concept of subjective quality of life. Personality traits, especially neuroticism and extraversion are seen as a base line determinant that are supposed to

influence the components of subjective quality of life directly and indirectly, through other psychological processes that are influenced by personality traits (22).

Figure 1: Model of subjective quality of life for the present study partly based on the model of subjective quality of life by Kim- Prieto and colleagues (22).



1.6 The role of personality in perceived Quality of Life

Kim- Prieto and colleagues noted that personality influences all factors and processes of the model and is therefore not mentioned (22). In this chapter these influences of personality are considered.

Subjective quality of life as a set point

There is a small relation between objective life circumstances an subjective quality of life (11-13). Even major favorable or adverse changes in life circumstances only increase or decrease subjective quality of life for a short period of time. Later the level of subjective quality of life is restored to the previous level again (26). According to Headey and Wearing every person has an individual set point of subjective quality of life that is always restored when changes due to external events occur. This relative stability of subjective quality of life and independence of contextual factors strengthens the assumption that stable factors such as

personality traits determine this set point. Headey and Wearing represent this in the „dynamic equilibrium theory“, that states that adaption processes and personality traits are related to each other (27). The finding that personality variables, rather than life events, influence subjective quality of life is also consistent with later investigations by Costa and McCrae and Ozer and Benet-Martinez (28- 29). These findings seem to be confirmed in a recent study with twins (30). Some researchers even suggest that personality is a major determinant of subjective quality of life and that it accounts for approximately 50% of the variance (31). Kim- Prieto and colleagues state that personality is a key element, because it is related to reactivity to emotional stimuli, individual differences in intensity to responses to emotional events and to the duration of emotional reactions (22). Researchers who consider personality as a key determinant in predicting subjective quality of life distinguish between a trait perspective and a psychobiological perspective. Both are explained in the following.

Psychobiological perspective

According to Gray two neurological based motivational systems are responsible for subjective quality of life. There exist the behavioral activation system (BAS) and behavioral inhibition system (BIS) that regulate behavior in the presence of reward and punishment signals. The behavioral activation system is sensitive to reward and non-punishment and the behavioral inhibition system to signals of punishment, frustrating non reward and novelty (32). The BIS is positively correlated to neuroticism and the BAS is positively correlated to Extraversion (33). It gets obvious that the two traits extraversion and neuroticism do not only play a crucial role in the relation to subjective quality of life but also are a main factor in the relation with the behavior inhibition and activation system. This strengthened the importance to especially investigate the traits neuroticism and extraversion in the relation with subjective quality of life.

Another argument to investigate these two traits is that levels of neuronal activity are linked to trait tendencies of the big five personality traits, especially to tendencies of extraversion and neuroticism. Personality traits are related to neurotransmitters, including a variety of transporters, promoters and receptors. These neurotransmitters that are related to the big five personality traits are dopamine beta hydroxylase, monoamine oxidase and catechol-O-methyl transferase. The higher the neuronal activity of these neurotransmitters the higher are people on extraversion. The lower the neuronal activity the higher people are on neuroticism. Thus, personality traits are influenced by genetics (34).

The role of Neuroticism and Extraversion in subjective Quality of Life

The present study investigates the relation between the components of subjective quality of life and the personality traits neuroticism and extraversion, because results of different studies suggest that especially these traits play a crucial role in the relation between personality and subjective quality of life (35- 40). The trait extraversion describes the opposite tendencies of being outgoing and energetic versus being solitary and reserved. People high on extraversion are thus high on energy and positive emotions. Neuroticism describes the tendencies of being sensitive and nervous versus being solitary and reserved. People high on neuroticism have the tendency to experience easily unpleasant emotions and have a low stability of emotions (41). Concerning the equilibrium theory, the level of subjective quality of life is especially predicted by the traits neuroticism and extraversion (and openness to experience) (42). Furthermore, they consistently correlate both with the cognitive component global life satisfaction (37, 43), and the two affective components positive and negative affect of subjective quality of life (38- 39, 44- 45). More specifically, extraversion is strongly related to positive emotions and more reactive to positive affect while neuroticism is related to negative emotions and more reactive to negative affect. Thus high scores on extraversion are related to higher positive affect and higher affective subjective quality of life. High scores on neuroticism are related to higher negative affect and lower affective subjective quality of life (46- 47). Recent studies that investigated the relationship between personality traits and the three-factor structure of subjective well- being for healthy people in the general population found the following correlations. Neuroticism correlates negatively with positive affect (-0.41), positively with negative affect (0.66) and negatively with life satisfaction (-0.39). Extraversion correlates positively with positive affect (0.45), negatively with negative affect (-0.31) and positively with life satisfaction (0.27) (48).

Trait perspective

Costa and McCrae distinguish between a temperamental and an instrumental view on the influence of personality traits on subjective quality of life. According to the temperamental view stable traits such as extraversion and neuroticism influence subjective quality of life directly (41). The instrumental view sees traits such as agreeableness as having an indirect influence on subjective quality of life. These two different influences of personality traits on subjective quality of life are also represented in the model of figure 1 on page 8. The instrumental traits cause people to encounter and react to life situations differently. Individuals who score high on extraversion or low on neuroticism have a greater chance to

encounter positive life situations that in turn influence subjective quality of life directly. Thus, according to the instrumental view, extraversion and neuroticism influences subjective quality of life indirectly (41).

Subjective Quality of Life and personality in persons with psychiatric illnesses

There are only a few studies that investigated the relation between subjective quality of life and personality traits of people with psychiatric illnesses. One study by Kentros and colleagues investigated this relationship concerning global life satisfaction measured with the Lehman QOL interview in persons with schizoaffective disorders and schizophrenia. They found that neuroticism correlates negatively with global life satisfaction (-0.63) and extraversion correlates positive with global life satisfaction (0.45) (49). That specific personality traits are linked to psychiatric illnesses is also evident in a meta- analysis by Gamez, Schmidt and Watson. They found that mental disorders have similar trait profiles. Neuroticism was found to correlate with all mental disorders. Furthermore many disorders showed low extraversion (50).

2. The present study

2.2 Relevance of the present study

Important to note is that most of the mentioned studies investigated subjective quality of life in relation with personality in healthy people in the general population. Studies concerning this topic with people who suffer from psychiatric illnesses are seldom. The mentioned study by Kentros and colleagues investigated this topic for people with schizoaffective disorders and schizophrenia, thus for a selected group of psychiatric patients. Using the Lehman QOL interview, this study investigated subjective quality of life only concerning to the global cognitive component (49). It becomes clear that there is a need to investigate subjective quality of life concerning all its components and with newer instruments and a wider target group in relation to personality for people with psychiatric illnesses. It is important to investigate in order to receive a more actual and accurate knowledge about the relation of personality and subjective quality of life for people with psychiatric illnesses.

Advantages of the present study are that the latest model and instruments of the concept subjective quality of life are used for investigating this. Other advantages are that in comparison with the study by Kentros and colleagues (49) a wider target group is used that

include people with schizoaffective disorders and schizophrenia but a wide variation of people with different comorbid psychiatric illnesses, such as combinations of illnesses that are related to schizophrenia, mood disorders, personality disorder and so on. A consequence is that the sample used includes a wider variation of comorbid psychiatric illnesses and is not limited to certain psychiatric illnesses. Respondents of the sample all have in common that they live in psychiatric residential groups. Thus, results of the present study can be applied to the special target group of people who suffer from psychiatric illnesses and live in residential group with full or part time care.

Furthermore, through investigating the relationship between personality and subjective quality of life cognitive and emotional processes that are typical for specific traits and are related to high subjective quality of life could be discovered through further research. Therefore, innovative interventions for increasing subjective quality of life could be designed that take personality factors into account. This might lead to better motivation within the patient groups for achieving personal goals and to a better adherence to medication. It is suggest that these positive consequences due to a higher subjective quality of life could lead to a higher chance for living more independently. This would lead to a decrease of the need for psychiatric care, and therefore in costs for this.

2.2. Purpose of the present study

The goal of the present study is to contribute to the research of the relation between personality and subjective quality of life in people with psychiatric illnesses. Due to the limitations of the mentioned studies the main purpose of the present study is to investigate the relation between the personality traits Neuroticism and Extraversion and the four components of subjective quality of life separately (domain/global life satisfaction, negative/positive affect) for people with psychiatric illnesses that live in psychiatric residential groups. Another purpose of the present study is to discover possible differences in the results of the component domain life satisfaction that was added for the present study and the component global life satisfaction that is used frequently in research.

2.3 Research questions and hypothesis

a) Are the personality traits extraversion and neuroticism related to the components of subjective quality of life (domain/global life satisfaction, negative/positive affect) in persons with psychiatric illnesses?

It is hypothesized that high scores on Extraversion are related to high scores on both cognitive components (domain/global life satisfaction), to high scores on the affective component positive affect and to low scores on negative affect. High scores on neuroticism are related to low scores on both cognitive components (domain/global life satisfaction), to high scores on the affective component negative affect and to low scores on positive affect.

It is hypothesized that the correlation between neuroticism and components of subjective quality of life is stronger than correlations between extraversion and components of subjective quality of life. Furthermore it is hypothesized that the correlation between neuroticism and the affective components is stronger than between neuroticism and the cognitive components.

b) Do the concepts of the two cognitive components global life satisfaction and domain life satisfaction of subjective quality of life differ, concerning to the individual persons?

It is hypothesized that the two concepts of the components global life satisfaction and domain life satisfaction will differ. It is hypothesized that the variance of the concept domain life satisfaction is higher than the variance of the concept global life satisfaction.

c) Do the traits extraversion and neuroticism predict the components of subjective quality of life?

It is hypothesized that Neuroticism predicts the components negative affect, affect balance and global life satisfaction more strongly than extraversion does. It is hypothesized that extraversion predicts more strongly the components positive affect and domain life satisfaction than Neuroticism does.

Furthermore, it is hypothesized that the demographic variables sex, age, education and career contribute to the predictive value of neuroticism and extraversion.

3. Method

3.1 Procedure

The sample was contacted through the management of the psychiatric department of the Alexianer- Hospital in Münster, a hospital for psychiatric illnesses. It was asked by the researcher whether it was possible to hand out the questionnaires mentioned below to patients of the psychiatric department. The investigator personally handed out the questionnaires and

answered questions of the respondents concerning to the procedure and questionnaires of the investigation, when needed. The questionnaires are paper and pencil questionnaires and are filled out by all respondents themselves, also questions concerning demographic variables. For the investigator it was possible to help respondents to comprehend the questions of the questionnaires and to control then for nonresponse and correctness of demographic variables.

3.2 Sample

The sample consisted of 19 people with several psychiatric illnesses who live in residential groups with full or part time care of the Alexianer- Hospital in Münster. Among them were 7 women and 12 men in the age of 23 to 64. Conditions for the respondents to participate in the study were suffering from psychiatric illnesses and making use of outpatient or inpatient psychiatric treatment. Making use of medications was no mandatory condition. Furthermore the respondents must have a minimum age of 18 years. Exclusion factors were symptom- free periods of one year or longer or not feeling restricted by the psychiatric illness, that was evaluated by the caregiver team of the psychiatric hospital.

3.4 *Measures*

Demographic variables

Demographic variables are assessed through a questionnaire that consisted of 4 questions concerning sex, age, education and career. The questions are open questions and later encode as described in Table 1 in the appendix of the present study. Categories are encoded with increasing amount or value. The higher the amount or value the higher the number or code. The options low range, middle range and high range of the category education refer to the three levels of types of schools in Germany: hauptschule (low range), realschule (middle range) and gymnasium (high range). The option daily structure of the variable career means that these persons are not yet able to work full day but take part in projects that give them diversion from everyday life and daily structure.

Subjective quality of life

Subjective quality of life was assessed by three self-report questionnaires: DIALOG-questionnaire, Satisfaction with Life Scale (SWLS) and Positive and Negative Affect Schedule (PANAS).

- *DIALOG- questionnaire*

The DIALOG-questionnaire assesses the first cognitive component of subjective quality of life, actual life satisfaction. The questionnaire was designed for assessing the subjective quality of life of people who suffer from psychiatric illnesses, in order to improve psychiatric care and subjective quality of life of patients. The questionnaire assesses the satisfaction with different life- areas for the period of the last two weeks (51). It consists of 11 items that can be answered with a 7-point scale, ranging from "very dissatisfied" to "very satisfied". The total score of domain life satisfaction is obtained by summing up the scores of the items of the DIALOG questionnaire.

- *Satisfaction with Life Scale (SWLS)*

The Satisfaction with Life Scale was designed by Diener et al. and assesses the second cognitive component of subjective quality of life, global life satisfaction. The Scale includes 5 items that are measured on a rating scale from 1 (strongly disagree) to 5 (strongly agree) (52). The German version was tested by Glaesmer et al. and shows good psychometric properties and validity with a good internal consistency (Cronbach's alpha = 0.92) (53). The questionnaire consists of 5 items that can be answered with a 7-point scale ranging from "strong rejection" to "strong agreement". The total score of the component global life satisfaction is obtained by summing up the scores of the items of the SWLS questionnaire.

- *Positive and Negative affect Schedule (PANAS)*

The Positive and Negative affect Schedule was designed by Watson et al. and assesses the two affective components Positive and Negative affect of subjective quality of life (54). The questionnaire was translated to a German version and tested by Krohne et al. (55). It shows to be a reliable and valid measurement, also with a German sample. The internal consistency shows a cronbach´s alpha of 0.88 for positive affect and 0.83 for negative affect (56). The questionnaire consists of 20 items of which 10 items express positive feelings and measure positive affect and 10 items express negative feelings and measure negative affect. It is questioned how often the respondents experienced each feeling in the last week. Answered can be with a 5-point scale ranging from "very little or not at all" to "extremely". The total score of the component positive affect is obtained by summing up the scores of the 10 items of the PANAS questionnaire that represent positive feelings. The total score of the component negative affect is obtained by summing up the scores of the 10 items of the PANAS

questionnaire that represent negative feelings. The score of the component affect balance is obtained by subtracting the score of the component negative affect from the score of the component positive affect.

Personality Traits

- *NEO Personality Inventory Revised (NEO PI-R)*

The traits Extraversion and Neuroticism were measured with the domains Neuroticism and Extraversion of the self-report version of the Neo Personality Inventory Revised. The questionnaire was developed by Costa and McCrae (57). The German version was translated and tested by Ostendorf and Angleitner and shows to be reliable and valid. It shows a good internal consistency between 0.87 and 0.97 for the five main scales. Furthermore this questionnaire is qualified for people with psychiatric illnesses (58). The questionnaire contains per trait 6 scales, each with 8 items. For the present study only questions of scales of the traits Neuroticism and Extraversion are asked. Questions are answered with a 5-point scale, ranging from "strongly agree" to "strongly disagree" (57). The total scores of the components Neuroticism and Extraversion are obtained by summing up the scores of the items of the questions of the NEO-PI-R that belong to these traits.

3.3 *Data analyses*

In the present study, data obtained by the questionnaires DIALOG (domain life satisfaction), Satisfaction with Life Scale (global life satisfaction), Positive and Negative Affect Schedule (positive affect, negative affect, affect balance) and NEO- PI-R (neuroticism, extraversion) and demographic variables (sex, age, education and career) are used for statistical analyses. In order to investigate the relationships between the components of subjective quality of life and personality traits Pearson correlations and multiple regression analyses were conducted. Correlations were conducted for the traits neuroticism and extraversion and the components domain life satisfaction, global life satisfaction, positive affect, negative affect and affect balance of subjective quality of life separately. Furthermore correlations of the traits neuroticism and extraversion were conducted. Multiple regression analyses was conducted using the personality traits extraversion and neuroticism and the demographic variables sex, age, education and career as independent factors and all components of subjective quality of life as dependent factors. Multiple regression models were established that include the independent

variables that explain most of the variance of individual differences of each component of subjective quality of life.

4. Results

To give an overview of the sample, demographic variables and their number of respondents are shown in Table 2. Results show that most respondents are men, in the age of 30 to 39, are low to middle range educated and take part in projects that enable them to have a day structure, thus most respondents are not able to work full day.

Table 2: Number of respondents of each category of demographic variables

Variables	categories	number of respondents
sex	male	12
	female	7
age	19- 29	5
	30- 39	7
	40- 49	3
	50- 59	4
education	no education	2
	low range	7
	middle range	8
	high range	2
career	not working:	4
	daily structure	13
	full day work	2

To investigate research question a), thus to explore the relationship between neuroticism, extraversion and subjective quality of life components, Pearson correlations are conducted. It was hypothesized that high scores on extraversion correlate with high scores on both cognitive components (domain/global life satisfaction), with high scores on the affective component positive affect and with low scores on negative affect. High scores on neuroticism correlate with low scores on both cognitive components (domain/global life satisfaction), with high scores on the affective component negative affect and with low scores on positive affect.
It was hypothesized that the correlation between neuroticism and components of subjective quality of life are stronger than correlations between extraversion and components of subjective quality of life. Furthermore it was hypothesized that the correlation between

neuroticism and the affective components are stronger than between neuroticism and the cognitive components.

Results in Table 3 show correlations between neuroticism and the components positive affect, negative affect, affect balance and global life satisfaction. Extraversion correlates with positive affect. Furthermore results show a correlation between extraversion, neuroticism and domain life satisfaction, but this correlation is not significant. Furthermore results show a correlation between extraversion and neuroticism.

Table 3: Correlations (2-tailed Pearson r) between neuroticism, extraversion and subjective quality of life components

Variables	Positive affect	Negative affect	Affect balance	Global life satisfaction	Domain life satisfaction	Neuo-ticism	Extra-version
Neuroticism	-,64**	,48*	-,64**	-,58**	-,44aa	1	-,72**
Extraversion	,49	- ,03	,27	,28	,40aa	-,72**	1

** p < .01; * p <.05; aa p = .059; a p = .088

To give an overview of basic values of the sample and to investigate differences between the concepts global life satisfaction and domain life satisfaction, means and standard deviations of neuroticism, extraversion, positive affect, negative affect, affect balance, domain life satisfaction and global life satisfaction are presented in Table 4. It was hypothesized that scores of the component domain life satisfaction have a greater variance between respondents than scores of the component global life satisfaction. Results in table 4 show that global life satisfaction has a standard deviation of 8,59 and domain life satisfaction has a standard deviation of 16,71.

Results in Table 4 show a T- value of 50 for the mean scores of neuroticism and a T-value of 44 for the mean score of extraversion. The sample of the present study scores high average on neuroticism and low average on extraversion, compared to the total normative sample of Costa and McCrae (57). Results show a low mean score for positive affect, a high mean score for negative affect and a low mean score for global life satisfaction. The standard deviation is especially high in neuroticism, extraversion and domain life satisfaction.

Table 4: Means and standard deviations of personality and subjective quality of life components

Variable	Range	Mean	SD	T-value (20-80)
Neuroticism	0-192	90,05	23,66	50
Extraversion	0-192	100,05	25,16	44
Positive Affect	10-50	25,47	5,62	
Negative Affect	10-50	23,26	7,30	
Affect balance	-40-40	2,21	11,09	
Global life satisfaction	5-25	16,57	8,59	
Domain life satisfaction	11-77	41,31	16,71	

To investigate research question c), whether the traits extraversion and neuroticism predict the components of subjective quality of life, multiple regression analyses was conducted using neuroticism, extraversion and demographic variables such as sex, age, education and career to predict the components of subjective quality of life (table 5). It was hypothesized that neuroticism predicts the components negative affect, affect balance and global life satisfaction more strongly than extraversion. It was hypothesized that extraversion predicts the components positive affect and domain life satisfaction more strongly than neuroticism. Furthermore, it was hypothesized that the demographic variables sex, age, education and career contribute to the predictive value of neuroticism and extraversion.

Results in table 5 show that positive affect seems to be predicted by neuroticism and the demographic variables age and education that accounted for 63, 4 % of the variance in individual differences of positive affect. Neuroticism alone accounted for 37, 5 % of the variance. Neuroticism seems to predict positive affect with the strength of -.57.

Table 5: Multiple regression analyses using the factors neuroticism, extraversion and the demographic variables sex, age and education in order to predict the components of subjective quality of life.

Predictors	positive affect		
	Adj. R	ß	p
Model 1	.63		.00**
Neuroticism	.37	-.57	.00**
Age	.54	-.42	.00**
Education	.63	.32	.04*

** p < .01; * p < .05

Negative affect seems to be predicted by neuroticism, extraversion and the demographic variable sex, that accounted for 41, 7% of the variance in individual differences. Neuroticism and extraversion alone accounted for 36, 7% of the variance of negative affect. Neuroticism seems to predict negative affect with the strength of 1.06 and extraversion seems to predict negative affect with the strength of .67

Predictors	negative affect		
	Adj. R	ß	p
Model 2	.41		.01*
Neuroticism	.18	1.06	.00**
Extraversion	.36	.67	.02*
Sex	.41	-.29	.14

** p < .01; * p < .05

Affect balance seems to be predicted by neuroticism, extraversion and the demographic variables sex and age that account for 51,1 % of the variance in individual differences. Neuroticism and extraversion alone accounted for 42,5% of the variance of affect balance. Neuroticism seems to predict affect balance with the strength of -1.03 and extraversion seems to predict affect balance with the strength of -.48.

Predictors	affect balance		
	Adj. R	ß	p
Model 3	.51		.00**
Neuroticism	.37	-1.03	.00**
Extraversion	.42	-.48	.06
Sex	.46	.21	.23
Age	.51	-.27	.13

** p < .01; * p < .05

Global life satisfaction seems to be predicted by neuroticism, extraversion and the demographic variables age and education that account for 60, 3% of the variance of individual differences. Neuroticism and extraversion alone account for 30, 5 % of the variance of global life satisfaction. The variable age seems to be a significant predictor. Neuroticism seems to predict global life satisfaction with the strength of -.71 and extraversion seems to predict global life satisfaction with the strength of -.08.

Predictors	global life satisfaction		
	Adj. R	ß	p
Model 4	.60		.00**
Neuroticism	.30	-.71	.00**
Extraversion	.30	-.08	.71
Age	.55	.51	.00**
Education	.60	-.25	.11

** p < .01; * p < .05

Domain life satisfaction seems to be predicted by neuroticism that accounts for 14,6 % of the variance and the strength of -.44.

Predictors	domain life satisfaction		
	Adj. R	ß	p
Model 5	.14	-.44	.05[a]
Neuroticism	.14	-.44	.05[a]

[a] p = 0.059

5. Discussion/Conclusion

The present study hypothesized relationships between neuroticism, extraversion and the components of subjective quality of life. These hypotheses are partly confirmed. Results show that the hypothesis could be confirmed only for the factor neuroticism, with the exception of the component domain life satisfaction: People who score higher on neuroticism experienced less positive affect, had a lower affect balance and global life satisfaction and experienced more negative affect. People who score higher on neuroticism had a lower domain life satisfaction, but this relationship was not significant and is later explained in detail in the discussion. The hypothesis concerning the relationship between extraversion and components of subjective quality of life is only confirmed for the relation with positive affect. People who scored high on extraversion experienced more positive affect. A relationship between extraversion and negative affect, affect balance and global life satisfaction have not been found.

The hypothesis that the personality traits neuroticism and extraversion predict the components of subjective quality of life is also partly confirmed. Thus, results partly support the model by Kim- Prieto and colleagues who state that personality factors influence all components of subjective quality of life. The present study only supports that the trait neuroticism significantly influences the components of the model by Kim- Prieto: positive affect, negative affect and global life satisfaction. Extraversion only influences the component positive affect. Results also show that several demographic variables add a contribution to the predictive value of neuroticism and extraversion. The highest predictive and significant value was found in the variable age on the variance of global life satisfaction. Furthermore education and sex contribute to the predictive value of the components of the model by Kim-Prietro and colleagues. The results are an indication to take demographic variables into account when investigating subjective quality of life. Concerning to adaptive interventions that aim at improving subjective quality of life, different treatment groups should be formed, depending on demographic differences in age, sex and education. For example older people are in general more satisfied with their global life satisfaction. For this group the focus of interventions should be on improving other components of subjective quality of life. This should be done to generate treatment groups in interventions that have similar factors that influence their subjective quality of life. This could improve effectiveness of treatment strategies and therefore of interventions. The more effectively interventions are, the lesser people need to take part in further interventions. This could reduce costs in health care.

Results show that neuroticism not only has a stronger relation to the components of subjective quality of life but also has a stronger predictable value, compared to extraversion. This agrees with the findings of Lucas and colleagues who state that especially stressful life events that reduce subjective quality of life have a strong influence (59). People high on neuroticism might have more often bad mood that leads to a higher chance of retrieving negative life events. This might give rise to the subjective impression that one had experienced mainly negative events that reduced subjective quality of life. Kim Prietro and colleagues also state that the evaluation of events thus the emotional reactions are strongly influenced by several psychological factors (22). Results of the present study show that neuroticism seems to predict all components of subjective quality of life significantly that are mentioned in the model by Kim- Prietro and colleagues and that demographic variables seem to increase this predictability. This emphasizes the instrumental view of the trait perspective by Costa and McCrae, who state that subjective quality of life is indirect influenced by personality (41). An explanation could be that personality and demographic variables function as a base line determinant for the psychological processes, mentioned by Kim- Prieto and colleagues that influence subjective quality of life directly. They state that the global evaluation of subjective quality of life is mainly characterized by cognitive aspects, for example the comparison between their own state of health and that of other people (22). The results of the present study show that both neuroticism and age seem to have a significant influence on the variance of global life satisfaction.

The results show that negative affect and positive affect both seem to be predicted by neuroticism but only negative affect by extraversion. This finding that neuroticism and extraversion differ in their relation with and predictive value of the affective components of subjective quality of life raises a discussion whether the concepts of positive and negative affect can be seen as opposite poles of the same concept. If this was true, extraversion was expected to correlate with positive affect and negative affect with same intensity, but the results do not show a relationship between extraversion and negative affect and only a small relationship with affect balance. Concerning to these findings, it remains uncertain whether the concept of affect balance can be obtained by subtracting the concept of negative from the concept of positive affect. Another explanation could be that neuroticism naturally has a stronger influence on psychological processes that influence subjective quality of life, such as memory, retrieval of past events and emotions, mood, motivation and so on. For example, people are better in remembering negative events and emotions than positive ones. These influences could lead to a smaller affect balance than measured objectively. Nevertheless, it is

the subjective impression that is of significance for investigating subjective quality of life. Therefore, Investigators should continue to investigate the concept of affect balance and how to estimate it but should be carefully in making conclusions on only the basis of the value of affect balance. It is recommended, when taking the concept affect balance into account not to ignore the separate concepts of positive affect and negative affect. This is recommended because values of affect balance can be the same, while the concepts of positive and negative affect greatly differ. For example, the value 10 of an affect balance can include a positive affect score of 20 and a negative affect score of 10 but also a positive affect score of 50 and a negative affect score of 40. Thus on basis of the value of the affect balance cannot be drawn any conclusions concerning to the amount of positive and negative affect of the individual person. Therefore the concept affect balance should not be used when the focus is on investigating individual persons.

When comparing the results of the present study with results of studies with the general population, it can also be noticed that the present study found stronger correlations between neuroticism and the components of subjective quality of life and smaller correlations between extraversion and the components. It also becomes clear that other investigators value relative small correlations ranging from 0.27 to 0.45 as moderate (48). Correlations like these are valued as moderate because in psychological research exist always more unknown variables that influence the variable that is investigated compared to other fields of investigations. Therefore the individual variances of variables are higher. Results of the present study show similar correlations between extraversion and positive affect and global life satisfaction. It shows stronger correlations between neuroticism and positive affect and global life satisfaction and a smaller correlation between neuroticism and negative affect than studies with the general population. It could be possible that neuroticism has a stronger influence on psychological processes in people who suffer from psychiatric illnesses than in the general population. Concerning to adaptive interventions that aim at influencing personality traits in people who suffer from psychiatric illnesses to improve subjective quality of life, the focus should be on the personality trait neuroticism, because this seems to have a strong influence on psychological processes and therefore on subjective quality of life.

When valuing correlations of 0.30 to 0.45 as moderate although they are statistically not significant, correlations concerning to the component domain life satisfaction gain in value. These correlations differ from that of other components, because the relation between neuroticism (-0.44) and extraversion (0.40) and domain life satisfaction has the same intensity. Although the predictive value in regression analyses was not significant, it can be

supposed that these traits have a similar influence on domain life satisfaction. It is important to further investigate the component domain life satisfaction and the relationship with personality traits and other factors, to confirm the assumptions of the present study. This is important because this component stands for the current satisfaction of several life domains of people. Precisely this current satisfaction with different life domains represents the most important starting point for interventions because domain life satisfaction indicates with which domains of one`s life someone is satisfied and which life domains need to be improved. Through this, treatment groups with people who have similar needs could be formed, so that treatment strategies could be developed that aim at improving specific life domains. For example, groups could be formed of people who are dissatisfied with the life domain social contacts.

Concerning the assumption that neuroticism might have much more influence on the components of subjective quality of life, it can be assumed that neuroticism is much stronger related to psychopathology than extraversion and therefore generates a stronger relation between neuroticism and subjective quality of life. The finding that neuroticism is stronger related to psychopathology than extraversion is also supported by findings by Lamers and colleagues. They found that emotional stability (reversed neuroticism) is related to psychopathology and a more important or significant contributor to emotional well- being in the general population (60). This could explain the strong relation between neuroticism and positive affect and affect balance of the present study and the significantly predictive value of neuroticism on all components of subjective quality of life. Furthermore, Lamers and colleagues found that extraversion is more related to positive mental health and not to emotional quality of life (60). This could also explain the small relation between extraversion and negative affect and affect balance of people with psychiatric illnesses in the present study.

With respect to the small correlations of extraversion and neuroticism with domain life satisfaction it is supposed that this component of subjective quality of life refers more to psychological or social well- being, thus to the eudaimonic approach to quality of life. It is supposed that domain life satisfaction will correlate more with variables of the eudaimonic approach such as autonomy, personal grows, self- acceptance, life purpose, mastery and positive relations with others, because these could be reflected in life domains mentioned in de DIALOG questionnaire. To confirm these suggestions further research concerning the validity of the DIALOG questionnaire is needed to know what concept this precisely measures. Furthermore, research that investigates the concept of domain life satisfaction and development of further questionnaires to measure this concept is needed to confirm these

suggestions. Results show a small relation between the concepts domain life satisfaction and the traits neuroticism and extraversion but no predictive value of these traits concerning to the concept domain life satisfaction. It seems as if the traits neuroticism and extraversion were related to the concept domain life satisfaction but do not predict it directly. It is possible that other factors mediate this relationship between neuroticism and extraversion and domain life satisfaction and influence this component directly. To consider the factors that influence domain life satisfaction further investigations in form of correlational and multiple regression analyses with other variables than used in the present study is needed. Concerning to the model used in the present study the component domain life satisfaction takes a special position next to the other components of subjective quality of life with yet unknown factors that mediate the relationship between domain life satisfaction and the traits neuroticism and extraversion. In the model is no direct relationship between the component domain life satisfaction and the traits neuroticism and extraversion. The modified model is shown in figure 2 in the appendix of the present study.

There are some limitations to be considered. First, the relations between neuroticism and extraversion with the components of subjective quality of life cannot draw any causal inferences, because data were gathered at one point of time. Thus, regression analyses could only be supported by further research that investigates personality traits and the components of subjective quality of life with several points of measurement in time in order to confirm a causal influence of personality traits on the components of subjective quality of life. Secondly, the sample was very small and consisted mainly of people living in the same residential group, a few living in other residential groups but all with full or half day care. Therefore the sample is not representative for other people with mental illnesses who live on their own or with relatives. Advantages of this specific sample is that inferences can be made on basis of the results for this special group of people that suffer from psychiatric illnesses and live in residential groups with full or part time care. Furthermore the mainly similar environment of the respondents could have had an influence on the results, for example it could be that at the date of data collection a general bad mood prevailed in the resident group. This could be possible for example because an excursion could not take place, for which reason the respondents mood was in general lower than normal. Other influences could be through the same caregiver team. Perhaps there were tensions or disagreement in the team and this negative atmosphere influenced the mood of the respondents. It gets clear that there exist many possibilities through which the respondents scoring could be influenced. Third, before data collection took place the caregiver team indicated several people of the resident group

who should not be asked because of their bad constitution due to increased symptoms. Thus, respondents who had really bad mood or severe symptoms did not filled in questionnaires. This also could have influenced results. A consequence could have been that the mean score of neuroticism is lower than when including all people of the resident group and mean scores of extraversion and of components of subjective quality of life are higher. Thus, the impression of the general state of the sample could be better than it really was.

Despite these limitations the results of the present study suppose a significant influence of the trait neuroticism on the components of subjective quality of life. Therefore, adaptive interventions designed to enhance subjective quality of life should take personality traits into account, especially the trait neuroticism, in that adaptive interventions decrease the personality trait neuroticism through learning how to control psychological processes and strategies that influence subjective quality of life. For example, people high on neuroticism could learn how to remember and retrieve positive events better that gives them the impression to have experienced mainly positive events and this could improve global life satisfaction. Furthermore these innovative adaptive interventions should also focus on demographic variable such as sex, age and education when determine target groups on which the interventions should focus and when forming different treatment groups on which different strategies are applied. Therefore the present study contribute to the research of personality and subjective quality of life in that it stresses the special position of the trait neuroticism and the contribution of demographic variables in predicting the components of subjective quality of life. Thus, it could be possible, with the help of further investigations to make use of these predictive values of subjective quality of life in regulated interventions. Once discovered which factors and processes mediate subjective quality of life, people who suffer from psychiatric illnesses could learn different strategies to improve their subjective quality of life. Further positive consequences could be that these people are able to live more independently. This in turn would reduce costs for psychiatric care. But also preventive interventions are conceivable. Once discovered which factors and processes mediate subjective quality of life people who are predisposed for low subjective quality of life could be selected for specific types of interventions. For example, these people could learn how to train strategies that lower neuroticism and in turn improves subjective quality of life and how to ignore mechanisms that are maintained through their personality traits and decrease subjective quality of life. When reducing neuroticism early it could be possible that the risk of getting psychological problems or getting psychiatric ill is reduced.

Further research in the form of regression analyses with several points of measurement in time is needed to support these finding. Furthermore the component domain life satisfaction needs to be further investigated. This is considered especially important, because this component is supposed to provide information of the current state of life satisfaction of people. This current state of people of different life domains is the starting point of interventions, because it gives information for what life domains satisfaction needs to be improved and with what one is dissatisfied.

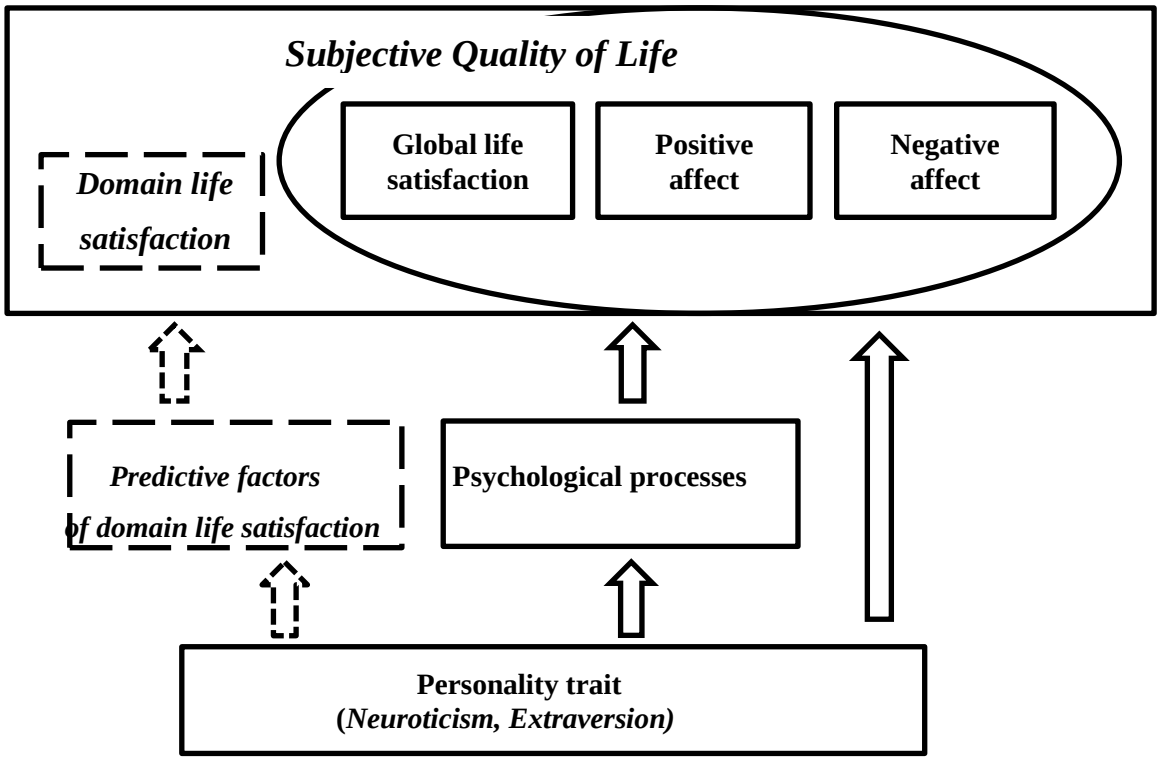
It can be concluded that personality, especially the trait neuroticism is a main predictor of subjective quality of life and should be taken into account when trying to improve subjective quality of life in adaptive interventions. The component domain life satisfaction correlates with the personality traits neuroticism and extraversion and differs from the component global life satisfaction in that it has a greater variance and seems not to be directly predicted by the personality traits extraversion and neuroticism.

6. Appendix

Table 1: encoding of categories of demographic variables

variables	categories	codes
sex	male	1
	female	2
age	19- 29	1
	30- 39	2
	40- 49	3
	50- 59	4
	60- 69	5
education	no education	1
	low range	2
	middle range	3
	high range	4
career	not working	1
	daily structure	2
	working	3

Figure 2: Modified model of subjective quality of life based on results of the present study and partly based on the model of subjective quality of life by Kim- Prieto and colleagues (31).



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