



PREDICTION OF HEALTH-PROMOTING LIFESTYLE BASED ON LIFE-MANAGEMENT STRATEGIES OF SELECTION, OPTIMIZATION, COMPENSATION IN ADULTHOOD

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ABSTRACT

In the current study, the contribution of the life-management strategies of selection, optimization, and compensation (SOC), in the prediction of dimensions of Health-Promoting lifestyle have been investigated.

Material and Methods: This research is descriptive research (correlation) is placed. The participants consist of 300 people (154 male, and 146 female) from among Education Ministry Offices of Tehran who have been chosen by Multiple-Stage Cluster sampling method. To evaluate life-management strategies, SOC questionnaire (Baltes, P., Baltes, M., Freund, & Lang, 1999), and for evaluate Health-Promoting lifestyle, Health Promoting Lifestyle Profile (HPLP-II) (Walker & Hill-Polerecky, 1996) has been used. To analyze data, Pearson Correlation and Hierarchical Regression Analysis have been run.

Results: Due to the emphasis of research literature on the importance of demographic information, like gender and education level, and with attention to their significant relations with original research variables, in order to statistical control of them, they entered in the first step of Hierarchical Regression Analysis after dummy coding of gender and effect coding of education level. The results showed that there was a significant relationship between SOC life-management strategies and Health-Promoting lifestyle (as this study expected, SOC life-management strategies have a positive relationship with Health-Promoting lifestyle). Total score of SOC life-management strategies could positively predict the sub-fields of "interpersonal relations", "health-responsibility", and "stress management" of Health-Promoting lifestyle.

Discussion: Our results clearly show that one of the most important factors for achieving a health-promoting lifestyle, are SOC life management strategies. So in order to promote healthy lifestyles in society, it's necessary to educate SOC life-management strategies, in the ground of lifespan developmental psychology

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Introduction

Lifespan developmental psychology or lifespan psychology (LP) deals with the study of individual development (ontogenesis) from conception into old age [1-3]. A core assumption of LP is that development is not completed at adulthood but that it extends across the entire life course [4]. There are two ways to construct lifespan theory: person-centered (holistic) and function-centered. The holistic approach connecting age periods or states of development into one overall pattern of lifetime individual development [1]. An example would be Erik Erikson's theory of eight lifespan stages [5]. The function-centered approach is to focus on a category of behavior and to describe the lifespan changes in their mechanisms. Two examples would be PB Baltes and MM Baltes's theory of adaptive processes of Selection, Optimization, and Compensation [6], and Pender's Health Promotion Model [7].

Health promotion model deals with the issue of health (mentally and physically) and extensively investigate factors affecting the formation of a healthy lifestyle (a style of life that is promoting health) [8,9]. Dunn was one of the first people who pointed the value of lifestyle on well-being and increased longevity [10]. According to Nola Pender, "health protection behavior"

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reflects a stable tendency of human on the face of danger and disease risk reduction implies, and “health promotion behavior” represents a tendency to increase the level of human development and well-being and self-actualization. She believes that combines both types of behavior to best represent healthy lifestyle [7].

Susan Walker expanded Pender’s health promotion model and believes that a healthy lifestyle has six components: 1) Spiritual Growth (development of inner resources and is achieved through transcending, connecting, and developing), 2) Interpersonal Relations (utilizing communication to achieve a sense of intimacy and closeness within meaningful relationships with others), 3) Nutrition (knowledgeable selection and consumption of foods essential for sustenance, health, and well-being), 4) Physical Activity (regular participation in light, moderate, and/or vigorous activity), 5) Health Responsibility (an active sense of accountability for one’s own well-being and paying attention to one’s own health), And 6) Stress Management (the identification and mobilization of psychological and physical resources to effectively control or reduce tension) [11-14]. Many researchers applied these 6 components for studying lifestyle across different life periods [15-20].

But, as mentioned, one of the most important models in the field of function-centered approach is the model of SOC on the ability to adapt and manage life along the way [21]. SOC takes the global view that at all stages of human development, individuals manage their lives successfully through three processes of developmental regulation: selection (S), optimization (O), and compensation (C) [22]. We summarize key features of the SOC components (i.e., S, O, and C) separately. 1) Selection (S): The primary focus of S is on setting goals. The biological, social, and psychological opportunities and constraints throughout the life span specify a broad range of alternative possible goals or domains of functioning [23]. Because causal and functional origins for S differ, Freund and PB Baltes have distinguished between two kinds of S; elective selection (ES) and loss-based selection (LBS). ES has a focus on aiming at desired states (e.g., committing oneself to focus on one’s career instead of one’s hobbies until a certain professional level is achieved). LBS is a consequence of experiencing a loss in goal-relevant means that are threatening the maintenance of a given level of functioning in a specific goal domain (e.g., committing oneself to collecting stamps instead of playing tennis when arthritic pain becomes too bad to continue with tennis) [22,24]. 2) Optimization (O): O involves the acquisition and investment of goal-relevant means. Specifically, the SOC model posits that for achieving desired outcomes in selected domains, acquiring, applying, and refining goal-relevant means (i.e., improvement toward O) is vital [3,25]. 3) Compensation (C): C, like O, also involves means. C has been defined as the use of alternative means to maintain a given level of functioning when specific goal-relevant means are no longer available. Considering the dynamics of gains and losses across life, a model of developmental regulation needs to address how people maintain a given level of functioning in the face of transient or permanent loss or decline in resources [26]. The maintenance of a given level of functioning in the face of loss of or decline in goal-relevant means can be attained by the use, refinement, and new acquisition of compensatory means. Typical instances of C are substitution for lost means by acquiring new internal or external means, such as hearing aids and glasses, or activating unused resources, such as invoking the help of others [22].

Many researches have been done about the relationships between using SOC strategies and indicators of healthy lifestyle. For example, researchers achieved to a positive relationship between SOC and life satisfaction, positive emotions, and lack of social and emotional loneliness [27]. Another research showed using of SOC can moderated the relation between financial strain and life satisfaction [28]. In other direction, researches showed the indicators of SOC predict global subjective well-being and job-related well-being [29]. Finally, it’s been found that when adults are faced with the loss of some of their abilities, such as working memory, to choose what is more important and the use of compensatory strategies, to maintain the level of previous performance [20].

According to the research literature, the aim of this study is to investigate the relationship between life-management strategies of SOC, and health-promoting lifestyle. Since the research literature related to health promotion lifestyle, and self-regulatory strategies of SOC, not to mention sex differences, in this study, using a sample with the participation of both sexes in the differences sex also be addressed.

Material and Methods

This research is descriptive research (correlation) is placed. That was the main objective of achieving the relationship between the predictor variables (SOC), with the predicted variable (health-promotion lifestyle). The relationship between variables was assessed using correlation and regression method. The target population included all adults (30 to 50 years) in 20 regions of Tehran’s educational districts to work. In this study, choosing of the required sample did in several ways. First, by using cluster random samplings of 10 districts of the 20 educational districts of Tehran were selected (North, South, East, West, North West and North East, each one, two regions). Since the “gender” and “education level” desired, because the literature [22] suggest that lifestyle can be different according to gender and educational level, quota sampling method was used. Thus, the gender on two category (female - male) and education level in three classes (diploma and High school diploma - BA - MA and above) were quota. Within each organization using convenience sampling procedure, sampling so that any quota to be filled. Using

this method, at least 300 subjects who met the inclusion criteria (Having age between 30 to 50, Working in one of the educational centers of Tehran, Lack of mental disorders based on DSM-5, and They informed consent to participate in research) were selected.

Measures:

1) SOC Questionnaire: The prototypical instances of S, O, and C provided the framework for formulating the items included in a 48-item SOC questionnaire (12 items each for ES, LBS, O, and C) developed by PB Baltes, MM Baltes, Freund, & Lang [30] and used in this study. A high score on ES means that a person endorses such behaviors as developing clear goals (as opposed to vague possibilities), selecting only a limited number of goals on which to focus one’s resources (as opposed to having a large number of goals at the same time), and building a goal hierarchy according to the importance of goals (as opposed to viewing all or most of one’s goals as being of similar importance). Similarly, a high score on LBS means that a person who is confronted with losses in goal-relevant means expresses a preference for such strategies as focusing on the most important goals, giving up less important goals, restructuring the goal hierarchy, or adapting the level of aspiration rather than maintaining the same number, aspiration level, and hierarchy of goals as before the loss occurred. A high score on O implies that a person endorses a large number of behaviors describing the acquisition and investment of means into one’s goals and persistence in goal pursuit when encountering obstacles. Finally, a high score on C reflects endorsement of a large number of behaviors indexing investment into alternative or substitute means in the face of loss or decline in means, for instance, searching for new means or ways of goal pursuit or activation of unused skills or resources (as opposed to giving up the respective goal domain) [31]. There are 12 items each measuring ES, LBS, O, and C. The items are formulated—using a forced-choice format such that each of them consists of two statements, one statement describing behavior reflecting S, O, or C (i.e., target), and the other statement offering a reasonable, non-SOC-related strategy (i.e., alternative/Distractor). When responding to the questionnaire items, participants were asked to decide which of the statements, characterizing the life-management behavior of two fictitious Persons A and B, respectively, described them better. The sum of affirmative responses to all items reflecting one of the three component processes represented the individual scores on each of the subscales [22]. The SOC measures have adequate reliability, e.g., elective selection, Cronbach's alpha = .75; optimization, Cronbach's alpha = .70; compensation, Cronbach's alpha = .67. SOC has good convergent and divergent associations with other psychological constructs (e.g., goal pursuit, thinking styles) and positive correlations with measures of well-being [22].

2) Health – Promoting Lifestyle Profile II: The 52-item HPLPII is composed of a total scale and six subscales to measure behaviors in the theorized dimensions of health-promoting lifestyle: spiritual growth (items: 6, 12, 18, 24, 30, 36, 42, 48, 52), interpersonal relations (items: 1, 7, 13, 19, 25, 31, 37, 43, 49), nutrition (items: 2, 8, 14, 20, 26, 32, 38, 44, 50), physical activity (items: 4, 10, 16, 22, 28, 34, 40, 46), health responsibility (items: 3, 9, 15, 21, 27, 33, 39, 45, 51), and stress management (items: 5, 11, 17, 23, 29, 35, 41, 47). A score for overall health-promoting lifestyle is obtained by calculating a mean of the individual's responses to all 52 items; six subscale scores are obtained similarly by calculating a mean of the responses to subscale items. The use of means rather than sums of scale items is recommended to retain the 1 to 4 metric of item responses and to allow meaningful comparisons of scores across subscales. Data from 712 adults aged 18 to 92 were used to assess validity and reliability. Content validity was established by literature review and content experts' evaluation. Construct validity was supported by factor analysis that confirmed a six-dimensional structure of health-promoting lifestyle, by convergence with the Personal Lifestyle Questionnaire (r = .678), and by a non-significant correlation with social desirability. Criterion-related validity was indicated by significant correlations with concurrent measures of perceived health status and quality of life (rs = .269 to .491). The alpha coefficient of internal consistency for the total scale was .943; alpha coefficients for the subscales ranged from .793 to .872. The 3-week test-retest stability coefficient for the total scale was .892. This revised and updated instrument will enable researchers to measure patterns of health-promoting behavior in intervention and outcome studies necessary for the advancement of the state of the science in health promotion [12].

Results

Due to the emphasis of research literature on the importance of demographic information, like gender and education level [32], and with attention to their significant relations with original research variables, in order to statistical control of them, they entered in the first step of Hierarchical Regression Analysis after dummy coding of gender and effect coding of education level.

Table 1: Demographic information of the research sample

Variables		Education			Mean
		Diploma	BS	MS	
Gender [N (%)]	Female	26 (8/6%)	101 (33/6%)	27 (9%)	154 (51/3%)
	Male	55 (18/3%)	79 (26/3%)	12(4%)	146 (48/7%)
Total Gender Number		81 (27%)	180 (60%)	39 (13%)	300 (100%)
Age [M (SD)]	Female	44/53 (9/54)	38/98 (6/73)	44/51 (9/36)	42/67 (51/3)
	Male	40/09 (8/11)	40/94 (7/35)	38/51(1/58)	39/84 (5/68)
Total Age Mean		42/31 (8/82)	39/96 (7/04)	41/51 (5/47)	41/25 (7/11)

According to Table 1, 51.3% of the participants were women and 48/7% of respondents were male. On the other hand, higher education respondents (60%) were at the undergraduate level. The mean age of the subjects is 41/25. Also, the average age of women, 42/67, and the mean age of the men was 39/84.

To examine the relationship between SOC and healthy lifestyle Pearson correlation test was used. The correlation coefficient and significance level are shown in Table 2. It is observed that the total SOC is significantly associated with three subgroups of health promoting lifestyle, including “interpersonal relations”, “health responsibility”, and “stress management”.

Table 2. The correlation matrix between all research variables

No	Variables	1	2	3	4	5	6	7	8	9	10	11	12
1	Spiritual Growth	1											
2	Interpersonal Relations	0.57**	1										
3	Nutrition	0.39**	0.36**	1									
4	Physical Activity	0.41**	0.30**	0.42**	1								
5	Health Responsibility	0.54**	0.43**	0.53**	0.49**	1							
6	Stress Management	0.58**	0.42**	0.45**	0.53**	0.61**	1						
7	Total HPLP	0.78**	0.67**	0.70**	0.71**	0.80**	0.80**	1					
8	Elective Selection (ES)	0.09	0.15*	0.18*	0.16*	0.17*	0.23*	0.22*	1				
9	Loss-Based Selection (LBS)	-0.07	0.03	0.07	-0.04	0.15*	0.14*	-0.06	0.21**	1			
10	Optimization (O)	0.22*	0.04	0/06	0.14*	0.11	0.03	0.31*	0.35**	0.18*	1		
11	Compensation (C)	0.08	0.26*	-0.02	-0.06	0.14*	0.16*	0.07	0.05	0.40**	0.26**	1	
12	Total SOC	0.05	0.21*	0.08	0.05	0.33*	0.18*	0.19*	0.59**	0.64**	0.62**	0.58**	1

To evaluate the linear relationship between total SOC and interpersonal relations, and also studying the contribution of predictor variable (SOC total) at variance of criterion variable (interpersonal relations), the hierarchical regression analysis was used. The results of this analysis are table 3.

Table 3. Regression analysis of Interpersonal relations on total SOC, after controlling gender & Education.

Step	Variable	Model	SS	df	MS	F	P Value	R	R ²
1	Gender Education	Regression	22.989	2	11.495	0.532	0.58	0.060	0.004
		Residual	6411.678	297	21.588				
2	Total SOC	Regression	122.454	3	40.818	3.914	0.04	0.138	0.019
		Residual	6312.213	296	21.325				

After enter of the SOC score in the second step of regression analysis, coefficient of determination increases (R² = 0/019), the change is significant (P > 0/05), F = 3.914). β coefficient of the total SOC is significant (P > 0/05, t = 2.160, and β = 0.126). Thus, after statistically controlling for demographic variables, total SOC predicted interpersonal relations.

To evaluate the linear relationship between SOC and health responsibility, and also studying the contribution of predictor variable (SOC total) at variance of criterion variable (health responsibility), the hierarchical regression analysis was used. The results of this analysis are table 4.

Table 4. Regression analysis of health responsibility on total SOC, after controlling gender & Education

Step	Variable	Model	SS	df	MS	F	P Value	R	R ²
1	Gender Education	Regression	234.656	2	117.328	5.135	0.006	0.183	0.033
		Residual	6786.261	297	22.849				
2	Total SOC	Regression	295.300	3	98.466	4.334	0.005	0.205	0.042
		Residual	6725.528	296	22.721				

After enter of the SOC score in the second step of regression analysis, coefficient of determination increases (R² = 0/042), the change is significant (P > 0/005), F = 4.334). β coefficient of the total SOC is significant (P > 0/05, t = -1.635, and β = -0.194). Thus, after statistically controlling for demographic variables, total SOC predicted health responsibility.

To evaluate the linear relationship between total SOC and stress management, and also studying the contribution of predictor variable (SOC total) at variance of criterion variable (stress management), the hierarchical regression analysis was used. The results of this analysis are tables 5.

Table 5. Regression analysis of stress management on total SOC, after controlling gender & Education

Step	Variable	Model	SS	df	MS	F	P Value	R	R ²
1	Gender Education	Regression	22.989	2	11.495	0.532	0.588	0.060	0.004
		Residual	6411.678	297	21.588				
2	Total SOC	Regression	133.039	3	44.344	2.083	0.019	0.144	0.021
		Residual	6301.628	296	21.289				

After enter of the SOC score in the second step of regression analysis, coefficient of determination increases ($R^2 = 0/021$), the change is significant ($P > 0/05$), $F = 2.083$). β coefficient of the total SOC is significant ($P > 0/05$, $t = -2.274$, and $\beta = -0.132$). Thus, after statistically controlling for demographic variables, total SOC predicted stress management.

Discussion

Lifespan research and theory is intended to generate knowledge about three components of individual development: (a) inter-individual commonalities (regularities) in development; (b) interindividual differences in development; and (c) intraindividual plasticity (malleability) in development. Joint attention to each of these components and the specification of their age-related interplays are the conceptual and methodological foundations of the developmental enterprise [1]. This study has been carried out in this framework. This means that: (a) the results presented are all points to the similarities between individual transformations. That is, according to these results could be SOC claimed that all the people who earn a higher score, earn higher score in healthy lifestyle. (b) Study the life span followed in the development of interpersonal differences as well. That is, the differences between men and women, and the differences between educations levels in the examined variables. And, (c) intraindividual plasticity, refers to change one variable at one person. This means that if SOC is fixed in a more or less evenly over time?

According to this study, life management strategies of SOC can predict subgroups of health-promoting lifestyle in the ground of lifespan developmental psychology. As the table 1 showed, there is a significant relation between total SOC and three of subgroups of health-promoting lifestyle (i.e. interpersonal relations, health responsibility, and stress management). Among the subgroup of SOC, elective selection showed positive significantly correlated with all subgroups of health-promoting lifestyle except spiritual growth. Loss-based selection showed a positive significant relation only with two subgroups of health-promoting lifestyle (i.e. health responsibility & stress management). Moreover, optimization had shown positively significant correlation with spiritual growth, physical activity, and stress management. Compensation was also positive and significant correlation with interpersonal relations, health responsibility, and stress management. On the model of health-promoting lifestyle [12] all the dimensions are health-promoting lifestyle has a positive nature. The assumption that the person who seek to promote their physical and mental health in all areas, could be SOC strategies used to achieve these goals. Other research [33] as well as the variables associated with different factors (such as academic achievement) have examined the positive effects have exhibited efficient lifestyle. In the following passage it's be trying to explain this relations and their predictability values. The results of tables 2 and 3 shows that total SOC can significantly and positively predict subgroup of interpersonal relations of health-promoting lifestyle. As Walker & Hill-Polerecky [12] discuss, an interpersonal relationship is a strong, deep, or close association or acquaintance between two or more people that may range in duration from brief to enduring. This association may be based on inference, love, solidarity, regular business interactions, or some other type of social commitment. Interpersonal relationships are formed in the context of social, cultural and other influences. The context can and may and perhaps will vary from family or kinship relations, friendship, marriage, relations with associates, work, clubs, neighborhoods, and places of worship. They may be regulated by law, custom, or mutual agreement, and are the basis of social groups and society as a whole. According to all of theorists on health-promoting behaviors, interpersonal relations are not only a need for all people in society, but also it's necessary for health development of personality and also necessary for getting a healthy lifestyle in lifespan. The results of this research showed that SOC strategies significantly predict interpersonal relations (as an important subgroup of health-promoting lifestyle). It means that as much as a person using SOC life management in his (her) life, the same amount increase genesis in interpersonal relations in global social interactions. It appears, then, that the skill sets involved in the components of SOC are sufficiently potent bases of adaptive, intentional self regulations that are linked to positive behavior and development in lifespan, despite their undifferentiated character. However, it is important for both theoretical and applied reasons to ascertain if, as developmental processes, such as orthogenesis, continue across ontogeny, and the early adolescent-like global SOC structure may be transformed to resemble the more adult-like tripartite structure, the potency of SOC, to serve as a predictor of positive development, will remain the same or change. Theoretically, if the tripartite adult structure is optimal for adaptive individual context relations in the adult and aged years [34], then SOC may account for greater variance in positive development across the lifespan, as the adult-like structure emerges; or different components of SOC may

be more important in regard to development through lifespan variance accounted for. These two possibilities are not mutually exclusive, of course, and it is reasonable to begin to investigate these ideas by assessing the structure of SOC in the middle years of adolescence and ascertaining the direction and magnitude of the links between SOC scores and indicators of positive behavior and development. Such assessment was the goal of the future study. Other researchers [35] emphasized the important role of SOC strategies for successful management of different domain of lifespan development. This research empirically found that SOC self regulatory strategies can provide a suitable context for growth of healthy habits (especially with promote and enrich interpersonal relations).

The results of tables 2 and 4 shows that total SOC can significantly and positively predict subgroup of health responsibility of health-promoting lifestyle. The principal characterization of solidarity and personal responsibility is that the community as a collective and people individually, are co-“producers” of health. The notion of co-responsibility has two important facets in this respect. First, it states that the “mutually supportive community” has a certain degree of responsibility for the health of each individual. In this sense, individuals are entitled to claims against the community for assistance. Second, it also implies that the community has certain claims against individuals. Leaving prudential benefits aside, the appeal to staying healthy has the aim of containing overall expenditure and opportunity costs. For all care needs to be financed by the solidaristic community, and limiting ones demands on the healthcare system reduces expenditure. Using services unnecessarily may also deprive another person in need of resources or medical attention, exacerbating resource allocation dilemmas [25]. But, SOC strategies are firstly individually practiced. On a general level, the SOC model describes fundamental developmental processes associated with selection, optimization, and compensation that underlie successful adaptation to the shifting balance of growth and decline across the life span. The processes can also be specified in an action-theoretical framework, describing strategies of goal selection and pursuit. As a result of this research, SOC life management strategies (Especially elective selection and compensation) as well provide conditions for performance personal responsibility for health (physical & mental). The SOC strategies commit person to proactively feel responsibility for his (her) mental and physical health. Zacher et al. explain that life management strategies (like SOC) develop across the lifespan and influenced by early personality developments. But the output of life management strategies always exhibited in spread of lifestyle. As a conclusion in this section, with increase SOC strategies in a person, health responsibility (as a subgroup of health-promoting lifestyle) increase simultaneously [24]. Some of researchers [23,26] have emphasized on the important role of life management strategies of SOC across the lifespan and for providing a healthy lifestyle. But this research has presented an empirical evidence for that told approach.

The other result of this research showed that life management strategies of SOC predict positive significantly the variance of stress management. Stress management refers to the wide spectrum of techniques and psychotherapies aimed at controlling a person's levels of stress, especially chronic stress, usually for the purpose of improving everyday functioning. In this context, the term 'stress' refers only to a stress with significant negative consequences, or distress in the terminology advocated by Hans Selye, rather than what he calls eustress, a stress whose consequences are helpful or otherwise positive. Stress produces numerous physical and mental symptoms which vary according to each individual's situational factors. These can include physical health decline as well as depression. The process of stress management is named as one of the keys to a happy and successful life in modern society [36]. Although life provides numerous demands that can prove difficult to handle, stress management provides a number of ways to manage anxiety and maintain overall well-being. Despite stress often being thought of as a subjective experience, levels of stress are readily measurable, using various physiological tests, similar to those used in polygraphs. Many practical stress management techniques are available, some for use by health professionals and others, for self-help, which may help an individual reduce their levels of stress, provide positive feelings of control over one's life and promote general well-being. So, stress management is one of most effective factors of lifestyle across the lifespan. On the other hand, SOC strategies are a collection of proactively life management for getting targets of life. It's necessary for stress management to using SOC strategies that provide and activate personal potential to getting a healthy lifestyle.

Conclusion

As a global conclusion of the research, As one instance of action theoretical concepts of human development (e.g., Brandtstadter, 2006; Lerner, 2002), the Selection, Optimization, and Compensation (SOC) model describes how individuals can contribute to their own, healthy development by selecting appropriate, potentially achievable, goals, and by findings ways to reach those goals. The relation between SOC-related behaviors and healthy lifestyle in adulthood has been well valued. The results of this study showed using life management strategies of SOC are Prerequisite for getting a healthy lifestyle. And with training SOC strategies, can promote health-promoting lifestyle indexes in all of fields of society.

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Conflict of interest

The authors declare no conflict of interests.

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