



## Studying Psychometric Properties of Children Hope Scale among Iranian Students

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### A B S T R A C T

In recent years, research in the field of positive psychology has increased. The ultimate goal of this approach is to identify the structures and practices that enable and sustain human beings in the face of life's difficulties and adversities. Therefore, this study aimed at investigating the psychometric properties of Children hope scale among students aged 10 to 16 years. The statistical sample of this study was 500 students (324 girls and 176 boys) in Iran who were selected by multi-stage cluster method from the statistical population. Subjects responded to C. R. Snyder et al. (1997), Children's hope scale (CHS). To confirm the validity of the structure of this scale, confirmatory factor analysis and internal consistency method were used and to evaluate the reliability, Cronbach coefficient was used. In general, the fitness characteristics of the confirmatory factor analysis model indicated appropriate fitness of the research data with the factor structure of Children hope scale. Moreover, the internal consistency method indicated validity of the structure of this scale. The Cronbach's alpha coefficient also indicated the stability of the measurement of children's hope scale. Based on these results, Synder et al. children hope scale can be used as a suitable measurement tool in research on students in this age range.

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**Keywords:** Children Hope Scale, Confirmatory Factor Analysis, Internal Consistency, Iranian Population.

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## INTRODUCTION

Positive psychology is the crystallization of a change in psychology because it moves from therapy toward optimizing quality of life (C. Snyder, Rand, & Sigmon, 2005). This approach studies the scientific strengths and weaknesses of human beings (Seligman & Csikszentmihalyi, 2014), and seeks to explore individual talents in the face of challenges and identify empowering factors in everyday experiences and factors that make life valuable for living (Suldo & Huebner, 2004). Hope is also a factor in personality empowerment and is in fact a motivational cognitive

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construct(Charles R Snyder, Lopez, Shorey, Rand, & Feldman, 2003), which draws the attention of the present study to children.

Research in recent decades has highlighted the importance of motivational factors in the behavioral and academic development of children and adolescents(Anderman & Maehr, 1994; Stipek, 2002). C. Snyder, Cheavens, and Sympson (1997), C. R. Snyder et al. (1997), have developed a motivational theory that focuses on hope motivational cognitive variable. C Rick Snyder (2000), considers hope to be different from other similar motivational cognitive variables such as scientific documents, optimism, self-efficacy, and so on. Hope has been conceptualized in several ways in research literature. Charles Richard Snyder and Forsyth (1991), defines hope as "the process of thinking about personal goals, along with the motivation to move toward goals and how to achieve goals". Schrank, Stanghellini, and Slade (2008), conducted a systematic study aimed at defining hope within the research context of mental health. They identified 49 definitions of hope in this study, which were combined to formulate a general concept of hope. The study showed that a futuristic expectation depends on achieving the relevant personal goals, which are considered mentally, but also on personal characteristics (such as self-efficacy and courage) and external factors. In Synder's theory, hope is conceptualized as a distinct individual variable that reflects a relatively stable mental assessment of goal-related capabilities(C Rick Snyder, 2000). However, it is thought that changes in levels of hope can occur over time through interventions such as counseling and education(Valle, Huebner, & Suldo, 2006).

Snyder's theory includes three main components of hope: goals, agents, and paths. Conscious goals are the cornerstone of this theory. Goals can be short-term or long-term, and they may vary significantly depending on their importance and the likelihood of achievement(C Rick Snyder, 2000). Paths show the individual's ability to create paths to goals(C. Snyder et al., 2005). Path thinking is characterized by an internal dialogue such as "I will find a way to do this" (Charles Richard Snyder, LaPointe, Jeffrey Crowson, & Early, 1998). Although such thinking requires only one path for a purpose, highly hopeful people often visualize multiple paths. These other paths become important when people face obstacles in the way of their goals(Irving, Snyder, & Crowson Jr, 1998). Thinking is a motivating component ensuring that a person will be able to start and continue trying to follow a certain path(Charles Richard Snyder et al., 1998). Factor thinking is characterized by an internal dialogue such as "I will find a way to do this."

The notion that children are full of hope dates back to 2,000 years. In addition, hope and children sometimes point to each other and see children as the hope of future life. Although there are sometimes interesting facts about the importance of hope, psychological texts in the field of children lack theoretical models of the activity of hope and differences and measurement of the concept of hope. A notable exception is Kolko, Kazdin, Thomas, and Day (1993), study, in which a scale of hopelessness for children was developed and validated as a reflection of negative expectations of oneself and the future(C. Snyder et al., 1997).

Different from emphasizing negative expectations, C. Snyder et al. (1997), conceptualized children's hope in the form of positive expectations. Hence, hope has been described by previous researchers as a general understanding of its goals that can be achieved (Snyder and

Forsyth, 1991). Although goal-oriented thinking has a long history(Pervin, 1989), the importance of goals in guiding children's lives has become known over the past two decades(Greene, 2020).

The concept of hope in children assumes that children are purposeful and that thoughts related to their purpose can be understood on the basis of two related components such as factor and path(C. Snyder et al., 1997). It is necessary to explain the basics of this concept to children in general. How children think about their goals can make a difference in how they manage their stress. Children with hopeful thinking can imagine and embrace goals related to successful problem solving.

Sick children can also visualize and imagine different tools and devices to achieve their desired health outcomes (path thinking), and they can begin and continue their efforts to use these tools (factor thinking). Although hopeful thinking has benefits for a normal, healthy child in achieving the desired results, health-related problems can determine the barriers to achieving a child's goal. In fact, for short-term and sometimes long-term periods, children with health problems need to focus on new goals, find other ways to achieve goals, and gather healing energies to begin and continue therapeutic abstinence. In this process, medical professionals (doctors, nurses, etc.) focus on the child's physical illness, and other members of the health team (psychologists, social workers, parents, etc.) focus on helping the child to think in a way that maximize health outcomes(C. Snyder et al., 1997). Hope applies to all children, both when they are healthy and when they are sick. In addition, there is a kind of mutual hope for a stable situation that allows children to take advantage of the different stressful and non-stressful situations they face. This second type of hope is a more stable pattern of thinking in achieving goals and led to the creation of Children's hope scale.

Children's hope is defined as a set of cognitions, including beliefs in personal abilities to create pathways to achieving goals (component of the path), as well as self-centered beliefs about starting and keeping moving toward those goals (the component). In the current conceptualization, in general, higher hope reflects the increasing levels of both path thinking and factor thinking about goals. Both components must be evaluated together to gain a general sense of children's hope(C. Snyder et al., 1997).The foundations of thought related to the factor and the path to goals are set in the first two to three years of life. In addition, basic lessons in hopeful thinking continue throughout the pre-school, childhood, and adolescence years, and the level of hope must be established during these later stages. Although relatively causal thinking about goals and objectives by early childhood - children of this age have no language skills to answer their tools - and middle childhood - although children can answer simple questions about themselves - is proven(C. R. Snyder et al., 1997).

Given the importance of the concept of hope in children and the role of this concept in the health of this group of people in society, it is necessary to have a reliable and consistent scale to measure this concept so that planning, actions and interventions can be done in this field.

It should be noted that this scale is still used in recent years in different countries on different populations of children, and this shows that this scale is well accepted for measuring hope in children, and on the other hand, it is a good scale to measure hope in children in Iran. Therefore, the aim of this study was to investigate the psychometric properties of children's

hope scale in order to take a step towards meeting this need.

## METHODOLOGY

It was a survey study and the study population included all students aged 10 to 16 years in Isfahan, Iran who studied in the first semester of the academic year 2015-2016. Children hope scale was translated into Persian by researchers and English speakers, and again translated into English to match the original text. In the next step, 5 faculty members of the university who had worked in the field of developmental psychology analyzed the questions and the face and content of items. After reviewing the questions, they confirmed the questions and after preparing the initial form of this scale, a preliminary study was performed on 50 students who were selected as multi-stage clusters. At the end of each questionnaire, an interview was conducted with each of them to examine their views on the ease of understanding the questions and answering the questionnaire. Finally, based on the results of preliminary studies and the presented points of view, some verbal changes were applied in the questionnaire and the final version of the "Children's Hope" scale was prepared. Then, in order to evaluate the reliability and validity of Children hope scale on the statistical sample of the study, i.e. 500 students, which was selected using a multi-stage cluster method between three primary schools (fourth to sixth grade), secondary school (eighth to ninth grade) and high school (first grade of high school) and the data obtained were collected for subsequent analysis. The students were in three age groups of 10 to 12 years (192 people), 13 to 14 years old (178) and 15 to 16 years old (130 people) and the average age of 500 students was 13/13.

*Children hope scale (CHS)*: In this study, the Children's Hope scale of C. R. Snyder et al. (1997), has been used. The questionnaire was developed to measure promising goal-oriented thinking in children and adolescents aged 8 to 16 years. This tool included 6 items of 6-point (0 = never to 5 = always), which includes two subscales of factor thinking (items 2, 4, and 6) and paths (items 1, 3, and 5). C. R. Snyder et al. (1997), reported that the mean reliability by Cronbach alpha for the scale was 0.77 and that the internal consistency of components were not taken separately because they were not used separately. Valle et al. (2006), also reported an alpha coefficient of 0.83 for children aged 10 to 14 years and 0.84 for children aged 15 to 19 years. Reliability was reported by retesting at 0.73 for two weeks and 0.71 for one month intervals (C. R. Snyder et al., 1997; C. Snyder et al., 1997). The reliability of the regression method was reported in Brondie, Indonesia and Nepal samples as 0.95, 0.67 and 0.70, respectively (Jordans, Ventevogel, Komproe, Tol, & de Jong, 2008; Tol et al., 2010; Tol et al., 2014).

Evidence for the validity of the structure of this tool has also been presented using confirmatory factor analysis method. Valle, Huebner, and Suldo (2004), Valle et al. (2006), and Haroz et al. (2017), supported the two-factor correlation model. They also found a significant correlation between life expectancy and satisfaction ( $r = 0.49$ ), perceived social support ( $r = 0.59$ ), externalized behaviors ( $r = 0.33$ ), and internalized behaviors ( $r = 0.32$ ). Differential validity has been demonstrated through non-significant correlations with IQ scores (Valle et al., 2004).

RESULTS

The average age of 500 students (324 girls and 176 boys) in the present study was 13.13. Cronbach's alpha coefficient was used to determine the reliability of Children's Hope scale in this study. Table 1 lists the descriptive statistics indicators (number, mean and standard deviation) and Table 2 shows the internal consistency coefficient (Cronbach alpha) for Children hope scale.

Table 1. Descriptive statistics index of research variables by gender

Descriptive indexes		N	Mean	Std. Deviation
Hopeness	Girl	324	32.12	6.36
	Boy	176	27.32	5.58
	Total	500	24.60	6.41
Path thought	Girl	324	11.23	3.63
	Boy	176	13.67	3.05
	Total	500	12.09	3.62
Factor tought	Girl	324	11.89	3.72
	Boy	176	13.65	3.19
	Total	500	12.51	3.64

As Table shows, the mean Children's Hope Scale 24.60 and its standard deviation are 6.41.

Table 2. Internal consistency coefficient (Cronbach alpha) variable of hope and sub-components

Variable	$\alpha$
Hope	0.74
Path thought	0.57
Factor thought	0.64

As Table 2 shows, Children's hope scale has acceptable reliability in the present study. In the structural validity study, two methods of correlation of each item with total score and confirmatory factor analysis were used. In Table 3, the correlation of each item with the total score of the scale is reported.

Table 3. Correlation of each item with the total score of scale

Item	Children's total hope score
Item 1	0.68
Item 2	0.65
Item 3	0.59
Item 4	0.66
Item 5	0.68
Item 6	0.70

As can be seen in Table 3, the correlation of all items with the total score of children's hope at the level of 0.01 is significant, all of which have a high internal consistency with the total score. The following are the results of the confirmatory factor analysis of the Children hope scale.

Confirmatory factor analysis: In this confirmatory method, a hypothetical factor structure is obtained. Table 4 shows the operating loads and the amount of variance explained for each of the components.

Table 4. Factor loads of the children hope scale

Item	Factor load	R*2	Sig
1. I think I'm pursuing my goals very well.	0.663	0.439	< 0.001
2. I can think of different ways to get the things that are important to me in life.	0.560	0.313	< 0.001
3. I pursue my goals just like my peers.	0.413	0.170	< 0.001
4. When I have a problem, I can solve it in many ways.	0.598	0.357	< 0.001
5. My past experiences have prepared me well for the future.	0.663	0.439	< 0.001
6. Even when others lose hope, I know I can find many ways to solve the problem.	0.669	0.448	< 0.001

As can be seen in Table 4, all factor loads are statistically significant at the level of 0.001 according to the reported t values. Table 4 shows the results of the calculation of indicators in the confirmatory factor analysis. According to the contents of Table 5, several fitness indicators were used to determine the adequacy of the fit.

Table 5. Results from the calculation of indicators in the confirmatory factor analysis of Children hope scale

Index	X <sup>2</sup>	Df	X <sup>2</sup> /df	GFI	AGFI	IFI	CFI	RMSEA
Girls	13.06	8	1.63	0.99	0.97	0.99	0.98	0.04
Boys	22.51	8	2.81	0.96	0.89	0.91	0.91	0.10
Total	26.77	8	3.35	0.98	0.95	0.97	0.97	0.069

The Chi-square index is the absolute fitness index of the model, which is closer to zero and is not statistically significant. When the sample size N is large, the chi-square presence is almost always statistically significant (Hazra & Gogtay, 2017), and this causes the chi-square statistic to almost always reject the fitness of the model (Bentler & Bonett, 1980; Jöreskog & Sörbom, 1993).

Therefore, many researchers measure chi-square relative to its degree of freedom (i.e., relative chi-square) (Wheaton, Muthen, Alwin, & Summers, 1977). Some researchers have stated that if this index is less than 2, it shows excellent fit and between 2 and 5 good fit and greater than 5 weak and unacceptable fitness of the pattern (Tabachnick, Fidell, & Ullman, 2007). The contents of Table 5 show the relative chi-square values for girls, boys, and total subjects, 1.63, 2.81, and 3.35, respectively, indicating good model fitness. The Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), the Comparative Fit Index (IFI), and

## Studying Psychometric Properties of Children Hope Scale among Iranian Students

the Incremental Fit Index (CFI) were the indicators that show the fitness of a certain model with the base model(Bollen, 1990).

The closer these indicators were to one, the better the fitness of the model. Of course, this value must be at least 0.90 for the model to be accepted. According to Table 4, the GFI, AGFI, IFI, and CFI values for all subjects were 0.98, 0.95, 0.97, and 0.97, respectively, indicating a good fitness for the present study model. The RMSEA index is another indicator of fitness. The second root is the mean of the residuals, which is interpreted as a function of the amount of covariance(Hazra & Gogtay, 2017). Browne and Cudeck (1992), show values above 0.10 for poor fit, 0.8 to 0.10 for moderate fit, between 0.05 and 0.8 for acceptable fit, and less than 0.05 for excellent fitness. Based on the contents of Table 4, this value for girls, boys and all subjects is 0.04, 0.10 and 0.069, respectively, so the fitness characteristics of Table 4 for all subjects showed that the data of this study showed an acceptable fitness, and this indicates the alignment of the words with the structure of children's hope. Therefore, due to the validation of the model in the present sample, exploratory analysis was discontinued. Figure 1, 2, and 3 below show the confirmatory factor analysis charts for the total number of subjects, girls, and boys in Children hope scale, along with the factor loads of each item.

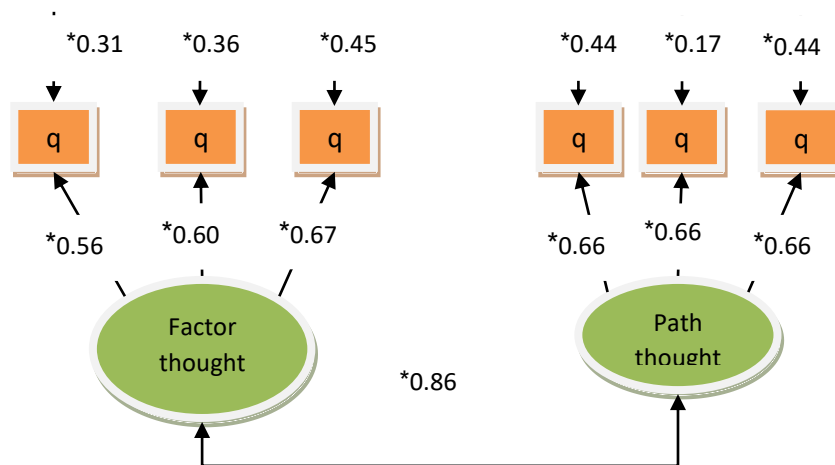


Figure 1. Confirmatory factor analysis chart of all subjects in Children hope scale in standard estimation mode

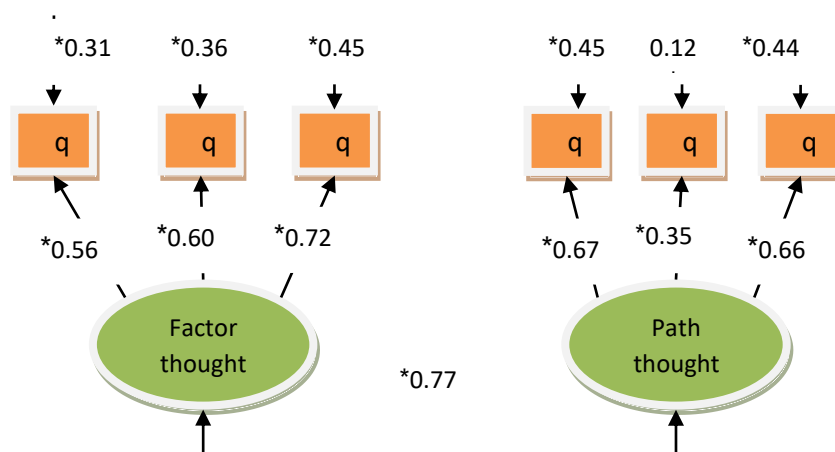


Figure 2. Confirmatory factor analysis chart for girls in Children hope scale in standard estimation mode

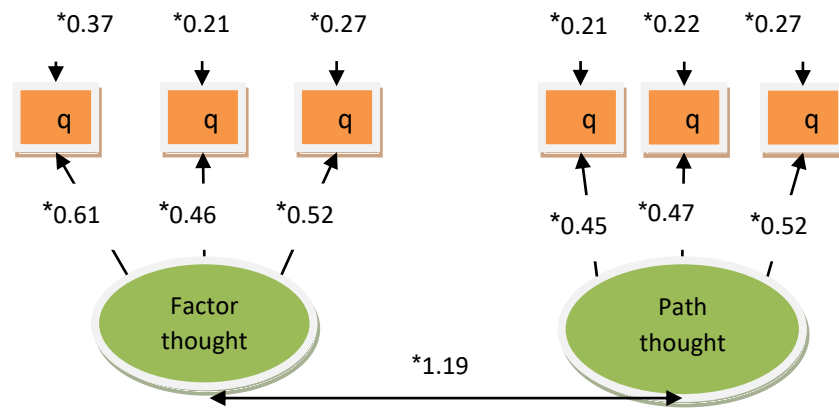


Figure 3. Confirmatory factor analysis chart for boys in Children hope scale in standard estimation mode

## CONCLUSION

The path and factor subscales were identifiable as Children hope scale components, and this pattern was present throughout the sample. In addition, the two factors reported high variance. Although the components of the factor and the path are identifiable, it should be noted that the correlation between them is approximately in the range of 0.65 to 0.70, so the positive theoretical correlations support it. Because 1) the model assumption is that factor and path thinking must come together to measure hopeful thinking focused on the goal, 2) the theoretical and empirical relationship of the components, and 3) the internal instability of the scales that only three items have been taken into account caution in the application of component and route components separately (C. Snyder et al., 1997). According to the aim of the present study, which was to evaluate the psychometric characteristics of C. Snyder et al. (1997), in the population of 10 to 16 years old students in Isfahan, the results of reliability coefficients were obtained using Cronbach's alpha method in boys, girls and the whole subject. Research has shown that Children's Hope Scale has a good reliability that is consistent with the findings of C. Snyder et al. (1997), Valle et al. (2006), Jordans et al. (2008), and Tol et al. (2010), (2014).

Also, in order to investigate the validity of this scale, a confirmatory factor analysis method was used. The results of confirmatory factor analysis indicated that the model fits well in determining the factors in the initial form expressed by C. Snyder et al. (1997), which indicates a good comparison of scale with the theory that is consistent with the findings of Valle et al. (2006), and Haroz et al. (2017). These findings support Charles Richard Snyder and Forsyth (1991), hope model, in which paths and factors are identified as components of the hope structure. Hope is a kind of intellectual process and has two components: factor thinking and path. The individual first selects the goal and then determines the ways to reach the goal, and then uses the motivation and will to move in the right path (Grewal & Porter, 2007; Pedrotti, Edwards, & Lopez, 2008). The present study showed that the Snyder et al., hope scale can be a suitable and valid tool for use in Iranian society, so this tool can be used in research institutes, counseling centers, schools and workshops. It is noteworthy that the statistical population of

this study included healthy children, so it is recommended that further research be conducted in statistical communities of children with health problems.

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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