

RESEARCH ARTICLE

Psychometric Revalidation of Children's Hope Scale Among Indian Adolescents

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Abstract: Hope is a positive psychological construct, and it has been found to impact academic achievement; dispositional optimism; positive affect and school grades; better problem solving, adjustment, and coping; school connectedness; self-worth; and mental health of children and adolescents. Agency and pathways are two components of hope. Agency is the goal-directed thinking, and pathways are the strategizing new ways to achieve the goal if the original path is blocked. Children's Hope Scale (CHS) is one of the widely used scales to measure the hope of children. However, the systematic review of the factorial structure of CHS revealed that many studies failed to replicate the original factor structure of the scale. Thus, the present study aims to: (a) establish the construct validity of CHS in the Indian context, and (b) obtain the internal consistency of CHS. The sample consisted of 400 adolescents randomly selected from different public schools of Aligarh City, India. CHS was used to collect data. This scale has six items measuring the two factors of hope, namely, agency and pathways. The results of the present study largely supported the original factor structure of CHS, although two of the items did not load on their original factors. The cumulative percentage of variance explained by two factors of hope was 46.55%. The internal consistency of CHS was found to be .71. Thus, CHS can be considered a valid and reliable psychological test for the assessment of hope among Indian adolescents.

Keywords: Hope, Children's Hope Scale, revalidation, Exploratory Factor Analysis

The construct of "hope" has gained considerable attention from religious, philosophical, and mythological perspectives. However, positive psychology made hope a popular construct as it is one of the key psychological strengths connected to many positive outcomes (Luthans & Jensen, 2002; Saleebey, 2000; Snyder, 1994; Valle et al., 2006). Hope is defined as a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy) and (b) pathways (planning to meet goals; Snyder et al., 1991). Thus, there are two components of hope—will power and

way power—and both carry equal additive weightage (Snyder, 2000). Hope is further elaborated as an individual's "cognitive and thinking" state in which the self-directed determination, energy, and perception of internalized control related to a goal are high. Generation of alternate pathways to reach the desired goal, if the prescribed path is blocked, is also high among people who are high on hope (Snyder, 1994, 1995a, 2000; Snyder et al., 2000; Snyder et al., 2002). The pathways/way power component of hope separates it from the lay conceptualization of the concept (Tong et al., 2010) and from the other positive psychology

constructs, such as optimism and self-efficacy. High-hope people embrace self-talk phrases such as, “I can do this,” or “I am not going to be stopped in any way even when the paths are blocked” (Snyder et al., 1998).

The interaction between agency and pathways is continuous as one leads to the other (Luthans et al., 2007), and emotions play a functional role in this process (Yotsidi et al., 2018). When the pursuit of the goal proceeds, the individual may encounter stressors leading to blockage of the path, which may jeopardize hopeful thought (Snyder, 2002). Low-hope persons are especially susceptible to succumbing to these kinds of stressors, unlike a high-hope person, who takes the stressors as a challenge (Snyder et al., 1991), leading to exploration of alternative pathways. It has also been found that under the conditions of goal non-attainment and subsequent negative emotions, high persons are better able to use feedback to improve their goal pursuit thoughts and strategies for that same situation in the future as compared to low hope persons (Snyder, 2002).

Hope has been found to be related conceptually and empirically to performance in various domains of life (Curry et al., 1997; Youssef & Luthans, 2006). Hope is related to physical and mental health, survival and coping beliefs and skills, and other desirable positive life and well-being outcomes (e.g., Kwon, 2000; Onwuegbuzie & Snyder, 2000; Range & Pentin, 1994; Scioliet al., 1997; Snyder, 2000). Hope is also associated with superior academic performance (Snyder, Cheavens, & Michael, 1999). More specifically, hope is related to coping and problem-solving in academic stressful situation as the use of academic disengagement strategies is low among high-hope students than low-hope students (Chang, 1998). Hope emerged as a significant predictor of future academic achievement while controlling the other variables in a regression model such as general intelligence, personality, divergent thinking and previous academic achievement of the students (Day et al., 2010).

Given the importance of hope for many desirable outcomes, it is not surprising that many scales have been developed to measure hope among people of different age groups and population, such as the Adult Hope Scale (AHS; Snyder et al., 1991), Herth Hope Index (Herth, 1992), Nowotny Hope Scale (Nowotny, 1989), Miller Hope Scale (Miller & Powers, 1988). However, a detailed discussion on various hope scales is beyond the scope of the present research as the aim

of the current research is to especially establish the construct validity of the Children’s Hope Scale (CHS) (Snyder et al., 1997).

Children’s Hope and CHS

Children’s hope is defined as “the cognitive set involving the belief in one’s capabilities to produce workable routes to goals (the pathways component), as well as the self-related beliefs about initiating and sustaining movement towards a goal (the agency component)” (Snyder et al., 1996, p. 400). It is believed that the children are goal-oriented and their thought falls into two above mentioned components (pathways and agency). The agency component refers to the thought that one can initiate and sustain action towards the goal, whereas the pathways component refers to the perceived capability of children to produce routes for the attainment of a goal. Children often experience barriers in the pursuit of goal attainment. Children’s hope can influence how they think and evaluate themselves when they face barriers. The early studies show that children feel upset when they experience a barrier in their goal pursuit behaviour (e.g., Barker et al., 1941). However, Snyder (1994) had as lightly different explanation that though the barriers evoke negative emotion, when a child is able to overcome the barrier and attains the goal successfully, it results in positive emotion.

Hope is also associated with many behavior outcomes for children and adolescents as well, such as academic achievement (Snyder et al., 1997), dispositional optimism (Edwards et al., 2007), positive affect and school grades (Ciarrochi et al., 2007), better problem solving (Pedrotti et al., 2008), adjustment and coping (Hellman & Gwinn, 2016), school connectedness (You et al., 2008), self-worth, and mental health (Marques et al., 2011).

CHS is one of the most widely used scales to measure hope for children and adolescents, being quoted in 30,30,000 research (https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Children+hope+scale&btnG=). CHS was developed by Snyder et al. (1997) to assess hope among children and adolescents. It is a dispositional self-report scale. It consists of a 6-point Likert scale ranging from “None of the time” to “All of the time.” It measures two components of hope, namely, agency (e.g., “I am doing just as well as other kids my age”) and pathways (e.g., “When I have a problem, I can come up with lots of ways

to solve it.”). This scale was standardized on the sample of 372 public school students (197 boys and 175 girls) in Oklahoma, U.S.A. The initial pool of 12 items subjected to principal component analysis with varimax rotation confirmed two factors each, with three items. The first and second factors explained 32.5% and 25.9% variance in the measure, respectively. The two factors were correlated with each other ($r = .52$). The internal consistency of the scale was found to be 0.74. The mean score on this hope scale was 25.41 ($SD \pm 4.99$). Convergent validity was tested with a self-perception profile for children (SPPC) competence (Harter, 1995). The CHS had a significant positive correlation with all the dimensions of the SPPC competence scale ranging from .34 to .59 (Snyder et al., 1997). The discriminant validity of this scale was tested with the hopelessness scale (Kazdin et al., 1983). The two factors had a weak negative correlation with the hopelessness scale ($r = -.18$ & $-.24$), but they did not reach statistical significance (Snyder et al., 1997). The discriminant validity of the scale was also examined

by correlating it with the Wechsler Intelligence Scale for School Children-Revise (WISC-R; Wechsler, 1974) and WISC-III (Wechsler, 1991) among children with attention deficit hyperactivity disorder (ADHD) because the assumption of hope theory is that goal-related process is not related to intelligence. The CHS score had a significant negative correlation with the total score with full-scale IQ score ($r = -.03$; Snyder et al., 1997).

Rationale of the Present Study

The CHS was originally standardized on the children of Oklahoma, United States. The subsequent validation studies of CHS in different countries, such as North-Eastern America (Valle et al., 2004), China (Lei et al., 2019), Portugal (Marques et al., 2009), and South-Africa (Savahl et al., 2015; Taria, Gideon, & Monique, 2016), have reported different factorial structure of CHS or the same factor structure but different factor loadings from the original normative sample summarised in Table 1. Surprisingly, the

Table 1

Summary of Various Construct Validity Studies of CHS

Studies	Sample	Country	Factors	Items in each factor
Valle et al. (2004)	531	South Eastern United States	2	Agency-1,3,5 Pathways-2,4,6
Shadlow et al. (2015)	96	America	2	Agency- 1,3,4,5 Pathways-2, 6
Lei et al. (2019)	249	China	2	Agency- 1,3,5 Pathways- 2,4,6
Lei et al. (2019)	273	China	1	All the items in single factor
Taria et al. (2016)	1062	South Africa	2	Agency-1,3 Pathways-2, 4,5,6
Haroz et al. (2015)	403	Indonesia	2	Agency - 1,3,5 Pathways - 2,4,6
Savahl et al. (2015)	1022	South Africa	2	Agency-1,2,3 Pathways-4,5,6
Marques et al. (2009)	367	Portugal	2	Agency-1,3,5 Pathways-2,4,6
Edwards et al. (2007)	135	America	2	Agency - 1,3 Pathways - 2,4,5,6

construct validity of CHS has not been examined yet in the Indian context, even though India is the second most populous country in the world. The present study aims to fill this gap in the existing body of knowledge by conducting the construct validity evaluation, including reliability assessment of CHS in the Indian context. Therefore, the objectives of this study are to determine the construct validity and to establish the reliability of the CHS in the Indian context.

Methods

Four hundred students studying in different public schools of Aligarh City, India, were randomly selected to participate in the study. The age of the participants ranged from 12–19 years, 15.89 (± 1.852) being the mean age. Out of the 400 respondents, 161 were men (40%), and the remaining 239 (60%) were women.

There are two broad classifications of literature for sample size determination for carrying out factor analysis. One is based on minimum sample size requirement, and another is based on N: p ratio (the minimum ratio of N, to the number of variables analyzed; (MacCallum et al., 1999, p.84). There is no agreement among experts on minimum sample size as it ranges from 200 (Guilford, 1954) to 300+ (Field, 2013). Cormey and Lee (1992) gave a range of sample sizes: 100=Poor, 200=Fair, 300=Good, 500= Very

Good, and ≥ 1000 =Excellent. Cattle (1978) proposed N:p in the range of 3–6 per item, and Gorsuch (1983) said that the ratio should be a minimum of 10 per item. As CHS is a 6-item scale, a sample of 400 can be considered very good for factor analysis.

CHS (Snyder et al., 1997) was used in this study. CHS has six items, and each item is to be scored on a 6-point Likert scale ranging from none of the time (1) to all the time (6). The scale measures two factors: (a) Agency (item numbers 1, 3, and 5) and (b) Pathways (item numbers 2, 4, and 6). The minimum possible score is 6, and the maximum score is 36.

After the approval of the study from the host institution, five schools in Aligarh City, India, were randomly selected for the study by using the paper chit for simple random sampling. Once the schools were selected, we made an appointment to meet the principals. In the meeting, we briefed them about the study's aim and ethical principle involved. Then, the participants were approached during the free period of their time-table. We informed the students about the study's main aim and confidentiality principle. Those students who agreed to participate in the study were given the consent form and asked to bring the consent they and their parents signed. The participants were asked to clear any doubt related to the understanding of items of the scale. They took approximately 10–15 minutes to fill out the scale.

Table 2

Mean, SD, Skewness, Kurtosis and Item-Total Correlation of the Items of Children Hope Scale (N=400)

Items	Mean	SD	Item to total correlation	Skewness	Kurtosis
1. I think I am doing pretty well.	4.14	1.36	.430	-.356	-.851
2. I can think of many ways to get the things in life that are most important to me.	4.18	1.26	.431	-.339	-.643
3. I am doing just as well as other kids my age.	3.141	1.45	.366	-.093	-.905
4. When I have a problem, I can come up with lots of ways to solve it.	4.26	1.45	.413	-.562	-.399
5. I think the things I have done in the past will help me in the future.	3.94	1.50	.357	-.159	-1.084
6. Even when others want to quit, I know that I can find ways to solve the problem.	3.88	1.496	.517	-.181	-1.085

Results

Obtained data were analyzed with the help of SPSS V-22. Mean, standard deviations (Sd), correlation, item-total correlations, principal component analysis, and Cronbach's alpha were calculated. The results are presented below in various tables.

The means and SDs of all the six items of CHS are shown in Table 2. The mean score ranged from 3.141 (average) to 4.18 (high). The skewness and kurtosis values for each item were within the prescribed range of absolute value for ascertaining the normality of data (Kline, 1998).

Table 3 shows the principal component analysis (PCA) analysis of CHS. Before conducting PCA, the data's factor ability was checked with the help of the Kaiser Meyer-Olkin (KMO) test and Bartlett's test of sphericity. KMO test measures the proportion of common variance among the items of the test. In this study, KMO is .67, and, as per the convention, the overall KMO should be .60 or higher to proceed for factor analysis (Kaiser & Rice, 1974). Bartlett's test of sphericity tests the hypothesis that the correlation matrix is an identity matrix, which means that the items/variables are uncorrelated and, therefore,

shall not proceed for factor analysis. If the value is significant, it shows that at least two items/variables are significantly correlated with each other. The value of significance associated with it should be less than .05 to proceed for factor analysis. The value was found to be significant for the current study (Chi square= 130.315, $p < .01$). After testing the sampling adequacy, PCA was conducted to examine the construct validity of CHS. Varimax rotation was used to extract the factors. The results show that PCA yielded two factors. The number of factors was decided on the basis of the scree plot of the matrix and the cumulative percentage of variance explained by the number of factors (see Figure 1 and Table 4). The cumulative percentage of variance explained by two factors was 46.55%. In the first factor, the factor loading of items 1, 2, and 3 were from 0.46 to 0.72; in the second factor, the factor loading of items 4, 5, and 6 were from 0.56 to 0.68. The average variance explained by the first factor was 36.6% and by factor 2 was 41.3%. The internal consistency of CHS was found to be 0.71. Internal consistency above 0.71 is considered acceptable (Field, 2013; George & Mallery, 2003). The composite reliability of each factor is above .60, showing the convergent validity of the scale (Fornell & Larcker, 1981).

Table 3

Principle Component Analysis of Children's Hope Scale (CHS) (N=400)

Items	Factor1 (Factor Loading)	Factor 2 (Factor Loading)
1. I think I am doing pretty well.	.599	
2. I can think of many ways to get the things in life that are most important to me.	.467	
3. I am doing just as well as other kids my age.	.722	
4. When I have a problem, I can come up with lots of ways to solve it.		.680
5. I think the things I have done in the past will help me in the future.		.682
6. Even when others want to quit, I know that I can find ways to solve the problem.		.569
Average variance	36.6%	41.3%
Composite reliability	.627	.68
Cronbach's Alpha		.71
Cumulative percentage of variance		46.55%

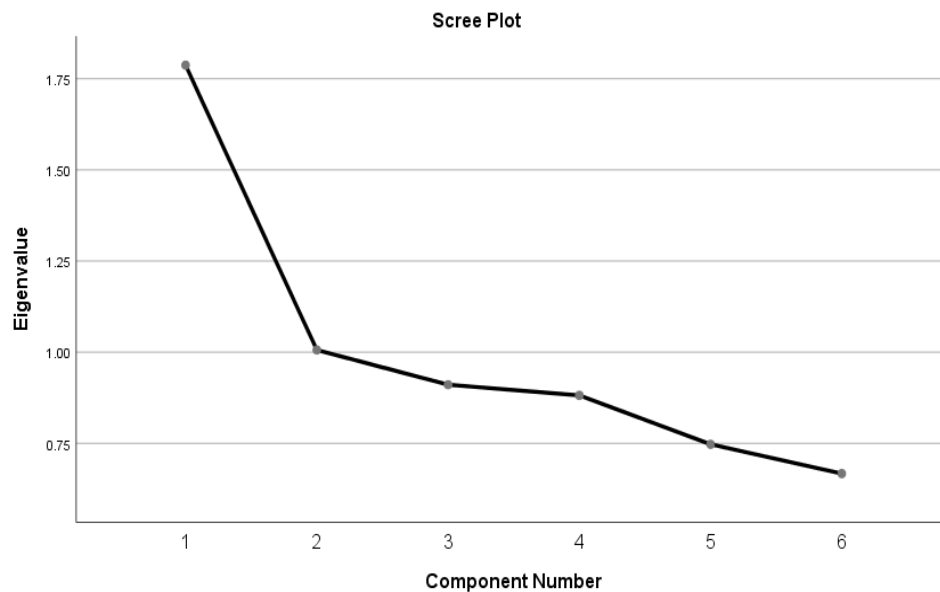


Figure 1. Scree Plot Shows the Number of Factors Extracted by Exploratory Factor Analysis of Children's Hope Scale (CHS)

Discussion

This study aims to examine the construct validity and to establish the reliability of CHS among Indian adolescents. From the above findings, it can be concluded that, overall, in the Indian context, CHS demonstrated acceptable psychometric properties. The exploratory factor analysis largely supported the original two-factor structure of CHS (agency and pathways) given by Snyder et al. (1994). However, it is noteworthy that item number 2 loaded on factor 1 (agency) in this study, which was originally conceptualized under the pathways component. Also, item number 5 loaded on the second factor (pathways), which was originally conceptualized under the agency component of CHS.

This study is supported by the findings obtained about the same factor structure among the adolescents of Africa (Savahl et al., 2015, N=1096). Therefore it can be comprehended that item number 2 serves as a better measure of inner motivation to achieve the goal (agency), and item number 5 emerged as a better indicator of finding the ways to attain the goal (pathways).

The reliability analysis (internal consistency) shows that the CHS is a reliable measure of hope assessment among Indian adolescents, especially for public school

students. Furthermore, Cronbach's coefficient alpha (.71) shows the higher internal consistency of the total scale score in comparison to the composite reliability of the sub-scales scores agency (.627); pathways (.68) suggests that, as recommended by Snyder et al. (1997), the total score should be used instead of using the sub-scale scores to evaluate the dispositional hope. Hope theory requires the summation of agency and pathways thoughts; these components are not meant to be treated separately (Snyder et al., 1997). Therefore in this study, CHS has met with the theoretical, construct, and other psychometric criteria. Hope can be reliability measured as a positive psychological construct in the context of Indian adolescents. It is a culturally and linguistically valid measure of hope.

In placing the findings of this study to the theoretical and psychometric perspective, it is important to highlight some limitations. The method of this study does not involve longitudinal research design; therefore, we should be cautious of overestimating the psychometric properties of the scale for such research designs. Further researches can be conducted by using a longitudinal research design, which will yield temporal stability to dispositional hope scores of children. Also, the sample includes only gender binary (men and women). This study does not include non-binary or gender queer, which is a spectrum of gender,

not necessarily men and women only. Prospective researchers can adopt the triangulation approach, where along with self-report of children and adolescents, the ratings of teachers and parents can also be taken. Thus, future researches may incorporate these limitations while assessing the hope of adolescents in the Indian context.

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Declaration of ownership:

This report is our original work.

Conflict of interest:

None.

Ethical Consideration

This study was approved by the Ethical Clearance Committee of the Department of Psychology, Aligarh Muslim University, India. The study was conducted in accordance with the declaration of Helsinki (1975).

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