VALIDATING "HOW I THINK" QUESTIONNAIRE – MEASURING SELF-SERVING COGNITIVE DISTORTIONS AMONG ADOLESCENTS IN KASHMIR

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Abstract

The present study aimed to validate "How I Think" Questionnaire (HIT-Q) among adolescents in Kashmir. The sample consisted of 283 adolescents selected purposively from different coaching institutions of Srinagar. Psychometric properties of the 54 item HIT-Q were assessed. Exploratory Factor Analysis using Principal Component Analysis was performed to assess the construct validity of the HIT-Q. Oblique rotation was applied in order to optimize the factor loadings on the extracted component. The analysis resulted in 4 factors with a total variance of 52.99%, parallel to the theoretical construct of a four factor structure. Items with factor loadings above 0.40 were retained as acceptable factor loadings. After considering factor loadings, item correlation and content of items, the 16 items were retained in the final version (henceforth, HIT-16-Q). Finally, reliability testing was performed to determine the internal consistency of the HIT-16-Q which was done using Cronbach Alpha Coefficient method (α). The internal consistency of HIT-16-Q was 0.85 which was considered good. The study revealed HIT-16-Q, as a valid and reliable instrument to assess cognitive distortions in adolescents of Kashmir. And it was concluded that the HIT-16-Q, after further examination of its structural, convergent and divergent validity, could be used as a measure of distorted self serving thinking in adolescents.

Keywords: HIT-Q, Self-Serving Cognitive Distortions, Reliability, Exploratory Factor Analysis, Principal Component Analysis

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Cognitive distortions are generally conceptualized as inaccurate or biased ways of conferring meaning upon experiences (Barriga et al., 2000). Cognitive distortions are defined as inaccurate thoughts and beliefs (Barriga & Gibbs, 1996). Self debasing cognitive distortions have been associated with internalizing problems like depression, anxiety, somatic complaints, withdrawn behaviour and suicide ideation (Dodge, 1993). Various instruments have been developed to evaluate these associations. The "How I Think" Questionnaire (HIT-Q) (Barriga et al., 2001) is an instrument that evaluates cognitive distortions related to externalizing problems, which are impulsive, overactive, aggressive and delinquent acts, classified as overt and covert antisocial behaviours (Barriga, et al., 2000; Mash & Wolfe as cited in Plante et al., 2012).

Four main categories of self-serving cognitive distortions (broadly classified into two types) have been identified and defined in adolescents with externalizing behaviors: self-centered (primary type), blaming others, minimizing/mislabeling, assuming the worst (secondary type) (Barriga, et al., 2001). In self-centered distortions or egocentric bias, individuals accord status to their own views, expectations, needs, rights, and desires to such a degree that the legitimate views of others (or even their own long-term best interest) are scarcely considered. The blaming others distortion means misattributing blame to outside sources or innocent others. Minimizing/mislabeling is defined as depicting antisocial behavior as causing no real harm or as being acceptable or even admirable, or referring to others with a dehumanizing label. Finally, assuming the worst refers to attributing hostile intentions to others, considering a worst-case scenario for a social situation as if it were inevitable or assuming that improvement is impossible in one's own behavior or in that of others (Gibbs et al., 1996; Barriga et al., 2000).

In order to evaluate self-serving cognitive distortions, researchers have developed a number of instruments over the years. However, these instruments have demonstrated various psychometric limitations (for a review, see Barriga et al., 2001). To counter this problem, the "How I Think" Questionnaire (HIT-Q) was developed based on the four main categories of cognitive distortions (Barriga & Gibbs, 1996). In the formulation of its items, the HIT-Q also applies four behavioral dimensions. These were selected from among the most common of the externalizing behaviors. Accordingly, for the "covert" dimension, the items of the HIT-Q were developed on the basis of cognitive distortions related to stealing and lying. For the "overt" dimension, the items were developed on the basis of cognitive distortions related to oppositional and aggressive behaviors (Barriga et al., 2001).

As for the psychometric properties of the HIT-Q, validation studies have shown the instrument to be reliable and valid. In fact, in its preliminary English-language version, the HIT-Q demonstrated strong test–retest reliability, with a statistically significant correlation of 0.91 between the two administrations. Comparable psychometric properties were obtained with different samples in the course of validating the instrument (Barriga et al., 2001). Various studies have been conducted on structural, discriminant, convergent and divergent validity of the instrument, indicating HIT-Q as a valid instrument (Barriga et al., 2008; Nas et al., 2008; Wallinius et al., 2011). HIT-Q has been translated and adapted in other languages also (Plante et al., 2012; Rahim et al., 2013). On the whole, these studies corroborate the view that the HIT-Q possesses satisfactory psychometric properties.

There is a need to have a valid and reliable psychometric instrument to assess self-serving cognitive distortions in adolescents of this conflict ridden society. The aim of the present study is to validate HIT-Q, using Kashmiri community-based sample of adolescents. The study is significant in the sense that it tests the model of Gibbs (1996) Four-Category Typology of Self-Serving Cognitive Distortions in a different socio-cultural context, thus adding to the literature theoretically as well as empirically. Further, the study deals with a sample group who have been brought up in a politically conflicted area, which could have an influence in the development of cognitive distortions in these adolescents. The HIT-16-Q could allow researchers and counselors to evaluate with greater precision and in limited time, the nature of the cognitive distortions that need to be changed and adapt interventions accordingly.

Method

Participants and Procedure

Three hundred students from different coaching institutions of Srinagar Kashmir took part in the study after taking consent from the institutional authorities. The objective of the study was clearly explained to the participants and issues of confidentiality and anonymity were also clarified and assured. Proper instructions were given and verbal consent was obtained prior to participants' involvement. The average time for questionnaire completion was about 20 minutes. The questionnaires were administered in group sessions and were collected on the same day. The voluntary involvement of the participants were appreciated and verbally thanked.

After screening the data fourteen participants were excluded for inconsistencies. The final sample included 129 males and 154 females, 283 participants in total with age range 16 to 19 years and M_{age} = 17.5.

Measuring Instrument

The How I Think Questionnaire (HIT-Q, Barriga, et al., 2001) consists of 54 items. Only 39 actually measure self-serving cognitive distortions. These items are divided into four cognitive scales and four behavioral scales. The cognitive scales are self-centered, blaming others, minimizing/mislabeling and assuming the worst. The same items of the HIT-Q are also divided into four behavioral scales: lying, stealing, opposition and physical aggression. The sum of the "lying" and "stealing" scales gives the score on the "covert" scale, whereas the sum of the "opposition" and "physical aggression" scales gives the score on the "overt" scale. The remaining 15 items are not calculated in the HIT-Q total score. Of these, eight make up the Anomalous Responding scale measuring social desirability. The other seven are prosocial items acting as positive fillers. Participants rate the items on a six-point Likert scale (1 = *strongly disagree* and 6 = *strongly agree*). A high score indicates a stronger adherence to self-serving cognitive distortions.

Statistical Analysis

All statistical analyses were conducted using software package SPSS version 16.0 for Windows. The descriptive statistics were analyzed. Internal consistency was evaluated by means of Cronbach's alpha to confirm the assumption for factor analysis. The construct validity was analyzed using Exploratory Factor Analysis (EFA). Prior to EFA, several preliminary analyses were performed to ensure the adequacy of sample size to enable factor analysis. As such, Kaiser-Meyer-Olkine (KMO) and Bartlett's test of sphericity were performed. The sample size was considered adequate if KMO value is more than 0.60 and Bartlett's test of sphericity is significant if p value is less than 0.05 (Field, 2009).

As mentioned earlier, the PCA method was applied in the extraction of components in which components with Eigen values of over1 were retained. Oblique rotation was applied in order to optimize the factor loadings on the extracted component. Items with loading factor of more than 0.4 were assumed as an acceptable loading factor. Finally, reliability testing was performed to determine the internal consistency of the items in HIT-16-Q which was done using Cronbach's alpha coefficient method (α).

Results

Scale Reliability

The instrument's reliability was evaluated by measuring the homogeneousness across the different items of the same scale and for the instrument as a whole by way of Cronbach's α. As seen in Table 1. The HIT-Q's internal consistency for overall cognitive distortions was satisfactory (0.86) and similar to the original version according to the manual (Barriga et al., 2001). Regarding the HIT-Q's cognitive dimensions, all the values were above 0.4 (see Table 1).

Table 1: Cronbach's α for the various scales of the How I Think Questionnaire (HIT)

Scales	*M*	*SD*	*α*
Self-centered	30.70	6.97	.63
Blaming others	36.27	8.07	.69
Minimizing/mislabeling	33.16	5.99	.49
Assuming the worst	38.18	8.29	.68
overall cognitive distortions	138.48	25.28	.86
Anomalous responding	31.05	6.02	.59
Positive fillers	33.87	4.28	.46
HIT-16-Q	50.98	14.22	.85

Factor Analysis

Analysis 1: Inter-item Correlation

Thirty nine items assessing cognitive distortions were analyzed for descriptive statistics and inter-item correlations. Items having low inter-item correlation (< .2) on an average were eliminated. An average inter-item correlation of 16 items was greater than 0.2. Sixteen items were further analyzed by principal component analysis.

Analysis 2: Exploratory Factor Analysis

Exploratory factor analysis (EFA) was conducted with Principal Component Analysis (PCA). The PCA was conducted on 16 items with Oblique Rotation (Direct Oblimen). The preliminary analysis of HIT-16-Q was found to be satisfactory. Data was checked for Multicollinearity (Determinant = .20 > .00001), revealing no problem. The Kaiser-Meyer-Olkin test (KMO = .881 > .5) verified the sampling adequacy for the analysis. Barttlet's Test of

Sphericity, examining whether the R-Matrix resembles the Identity Matrix, was found significant (X^2 (120) = 1.051E3, $p < .001$), indicated that correlation between items sufficiently large for PCA. The values of the Anti-image correlation matrix were above 0.5 for all items.

Table 2: Descriptive Statistics and Communalities after Extraction by PCA

Items	*M*	*SD*	h^2
Q15	3.59	1.71	.639
Q21	2.97	1.54	.606
Q22	3.21	1.69	.536
Q28	2.73	1.54	.578
Q32	2.75	1.67	.369
Q33	2.98	1.57	.418
Q35	3.01	1.62	.584
Q39	3.62	1.66	.525
Q40	2.94	1.73	.443
Q42	3.68	1.57	.410
Q43	2.99	1.55	.610
Q44	3.88	1.60	.581
Q49	3.81	1.59	.508
Q50	3.71	1.55	.471
Q53	2.55	1.48	.646
Q54	2.57	1.59	.554
		Mean Communality =	.529

An initial analysis was run to obtain Eigenvalues for each component in the data. Four components were found having Eigenvalues over Kaiser's Criterion of 1 and in combination explained 52.99% of variance. The Scree plot also suggested four components with eigenvalues above 1 (see Figure 1). Taking sample size, Scree plot, Kaiser's Criterion and the theoretical basis, 4 components were retained in the final analysis.

Table 3: Pattern Matrix showing loadings after rotation

	Components			
Items	1	2	3	4
Q15	.807			
Q21	.725			
Q22	.577			
Q28	.501			
Q32				
Q33		.501		
Q35		.734		
Q39				.637
Q40	.577			
Q42			.508	
Q43		.758		
Q44			.755	
Q49				.596
Q50			.512	
Q53		.785		
Q54			.703	
Eigen values	4.95	1.36	1.11	1.10
% of Variance	30.95	8.50	6.91	6.64

Allowing items to be loaded on other factors and to be correlated with each other within type of distortions, structure and pattern matrix were calculated applying oblique rotation. The factor loadings of 15 items were above 0.4. However, Item 32 could not load on any factor in pattern matrix (see Table 3). Checking the structure matrix, all factor loadings were found significant (greater than 0.40) (see Table 4). So the item was retained. However the items loaded highly on other factors, indicating change in factor structure.

Table 4: Structure Matrix showing loadings after rotation

Items	Components			
	1	2	3	4
Q15	.773			
Q21	.704			
Q22	.678			
Q28	.616			
Q32		.474		
Q33		.604		
Q35		.757		
Q39				.678
Q40	.646			
Q42			.599	
Q43		.724		
Q44			.732	
Q49				.651
Q50			.614	
Q53	.771			
Q54		.720		
Eigen Values	4.95	1.36	1.11	1.10
% of Variance	30.95	8.50	6.91	6.64

The Cronbach's α of these 16 items of cognitive distortions was found to be 0.85 (see Table 1). The correlation coefficient between the HIT-16-Q and the original 54 item HIT-Q was found to be .917. In sum, the 16 item version (HIT-16-Q) of the HIT-Q demonstrated satisfactory psychometric properties in terms of both reliability and validity.

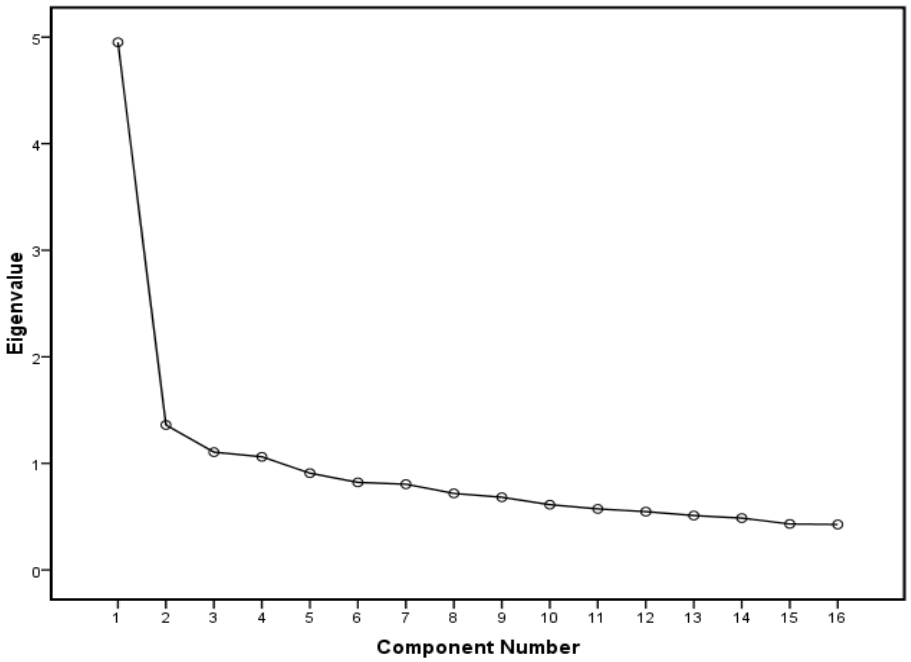

Figure 1: Scree Plot

Discussion

The link between cognitive distortions and externalizing problems indicates the importance of cognitive distortions as a marker of antisocial behaviour. It often leads to a range of behavioural problems by rationalizing the antisocial attitudes, maladaptive beliefs and irrational thoughts. It neutralizes the guilt thus leads the morally inappropriate behaviours (Barriga, et al., 2000). So understanding the nature and levels of cognitive distortions is important in order to obtain a fuller understanding of the nature of behavioural problems among adolescents (Rahim, et al., 2013).

The "How I Think" Questionnaire (Barriga, et al., 2001), a paper-and-pencil, self-report measure of self-serving cognitive distortions has been validated in different contexts. So the present study was aimed to validate HIT-Q, by evaluating its psychometric properties in a different socio-cultural context and a conflict ridden area of Kashmir.

The reliability of the subscales of HIT-Q was in line with previous studies on adolescents (e.g. Barriga, et al., 2001; Nas, et al., 2008) with very high internal consistency for the total HIT-Q. However, minimizing/mislabeling cognitive distortion scale had a lower internal consistency. This might be due to the scale containing formulations that might be hard to relate to and could

also reflect lack of power in the analyses. The camouflage scale Positive Fillers also had a low internal consistency; however, it is not problematic. As the total HIT-Q scale had very high internal consistency, indicating that the instrument could be shortened as some of the subscales included, measure basically the same construct (Wallinius, et al., 2011).

Exploratory Factor Analysis using Principal Component Analysis with Oblique Rotation (Direct Oblimen) was performed. Preliminary analysis was performed prior to the PCA. Thirty nine items measuring self serving cognitive distortions were analyzed for inter-item correlations. Data revealed low inter-item correlations. These low inter-item correlations could be explained by the fact that our local adolescents have different socio-cultural and political concepts. So the items having low inter-item correlation on an average were eliminated. Consequently, only 16 items were valid for further testing. The preliminary analysis seems to be satisfactory and fulfilled all the requirements for sampling adequacy. The KMO value (0.88) was found good. The Bartlett's Test of Sphericity (X^2 (120) = 1.051E3, $p < .001$) was highly significant and the Anti-image correlation coefficients of all items were above 0.5, suggesting that data is appropriate to proceed with PCA.

Analysis of these 16 items produced better results in terms of range of communalities, total cumulative of variance and factor loadings. Four components were extracted based on Eigenvalues over Kaiser's Criterion of 1, Scree plot, and the proposed model, which in combination explained 52.99% of variance. Applying Oblique Rotation factor loadings were calculated. All the items revealed high loadings, except one, which could not load in pattern matrix but loaded greater than 0.4 in structure matrix. The EFA using PCA showed that the factor loadings of the items in HIT-16-Q did not correspond to the original domains of HIT-Q. The items loaded highly on different factors, contrary to the findings of Barriga, et al., (2001) validating original HIT-Q, but consistent with some studies revealing different factor structure (e.g., Nas, et al., 2008; Rahim, et al., 2013). The political, social and cultural context could be one of the reasons that may explain why certain items highly loaded into different factors compared to the original factors.

The theoretical structure of the HIT-Q questionnaire with four different categories of self-serving cognitive distortions was not supported in the Wallinius, et al., (2011) study. The study showed that a unidimensional cognitive structure was preferable, which is consistent with Samenov´s statement that criminal cognitions over time become consolidated into a holistic

"criminal mind". This indicates that there could indeed be a difference in the composition of self-serving cognitive distortions. The underlying structure of the "criminal mind" is yet to be firmly established. The results of the present study also indicate that further investigation on the structural validity of the HIT-Q is warranted.

Internal consistency which examines the average inter-item relationship of the items of any scale is very important as it measures the degree to which the items are related to each other. According to Peat et al. (as cited in Rahim, et al., 2013), a cut-off alpha value above 0.70 is considered good in the field of social science. The reliability of HIT-16-Q was measured with internal consistency reliability using Cronbach's alpha. It is worth to note that the reliability value for HIT-16-Q was found to be 0.85 which exceeded the cut-off alpha value as recommended by Peat, et al. (as cited in Rahim, et al., 2013), revealing HIT-16-Q as a reliable psychometric instrument.

The results of this study contribute to HIT-Q literature. HIT-16-Q is a valid and reliable psychometric instrument to measure and assess cognitive distortions in adolescents of Kashmir. It is expected that many individuals will benefit by having this HIT-16-Q. It is highly recommended to use this HIT-16-Q in settings such as in research, psychological assessment, and counseling for screening and rehabilitation purposes. Self-serving cognitive distortions can improve our understanding, assessment and, possibly, treatment of antisocial behavior among adolescents. Instruments such as the HIT-16-Q in particular, could possibly be used as a complementary aid in the dynamic risk assessment and management within the clinical, psychiatric and forensic field.

A potential limitation of the present study concerns the sample size. For factor analysis large sample size (minimum 300) is preferable (Cohen, 1992; Wilson VanVoorhis & Morgan, 2007). In conclusion, the HIT-Q requires further culturally appropriate revision. To improve the results, a repeat study should include: (i) rephrasing or changing the items to be more suitable for the Indian context in general and local context in particular and (ii) a larger sample size. A new measuring scale could also be devised to provide an accurate assessment of the cognitive distortions among adolescents, which has acceptable levels of reliability and validity and is applicable to Indian adolescents keeping in view the political, social and cultural aspects.

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HIT-16-Q

		Items
1	Q15	It is no use trying to stay out of fights.
2	Q21	It is ok to tell a lie if someone is dumb enough to fall for it.
3	Q22	If I really want something, it doesn't matter how I get it.
4	Q28	You should get what you need even if it means someone has to get hurt.
5	Q32	You should hurt people first, before they hurt you.
6	Q33	A lie does not really matter if you don't know that person.
7	Q35	You might as well steal. If you don't take it, somebody else will.
8	Q39	If someone is careless enough to lose a wallet, they deserve to have it stolen.
9	Q40	Everybody breaks the law, it is no big deal.
10	Q42	Getting what you need is the only important thing.
11	Q43	You might as well steal; people would steal from you if they had a chance.
12	Q44	If people don't cooperate with me, it is not my fault if someone gets hurt.
13	Q49	I might as well lie - when I tell the truth, people don't believe me anyway.
14	Q50	Sometimes you have to hurt someone if you have a problem with them.
15	Q53	Everybody steals: you might as well get your share.
16	Q54	If I really want to do something, I don't care if it is legal or not.