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The Hindi Adaptation and Standardization of the Proactive Coping Inventory (PCI)

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Abstract

In this paper we present the Hindi adaptation of Proactive Coping Inventory (PCI). All the 55 items were translated into Hindi by independent translators. A consensus version (moderation) of these translations was developed looking at the language and cultural suitability of the words. Thereafter, backward translations of the moderated version were performed to check semantic discrepancies. After measuring item equivalence, we standardized the Hindi version of PCI on a representative sample of senior citizens. Contrary to the proposition of the original scale, a fourteen factor solution emerged out of the factor analysis. The factor structure and reliability coefficients were compared between the original PCI and the Hindi version of PCI.
Key words: Proactive Coping Inventory, factor analysis.

Resumen

En este artículo se presenta la adaptación al hindi del Inventario de Afrontamiento Proactivo (PCI). Los cincuenta y cinco ítems fueron traducidos al hindi por traductores independientes, llegando a una versión de consenso que tuvo en cuenta el significado y la oportunidad cultural de las palabras, y realizando traducciones de la versión moderada para verificar discrepancias semánticas. Después de medir la equivalencia de los ítems, se estandarizó la versión hindi del PCI en una muestra representativa de personas mayores. Al contrario que en la escala original, los resultados indicaron una solución de catorce factores. Se comparan la estructura factorial y los coeficientes de fiabilidad entre las versiones original e hindi del PCI.
Palabras clave: inventario de afrontamiento proactivo, análisis factorial.

Several researchers have attempted parsimonious classification of coping dimensions. A review of literature shows that researchers have proposed variety of coping dimensions, mostly as pairs. For example, primary versus secondary control (Rothbaum, Weisz, & Snyder, 1982), mastery versus meaning (Taylor, 1983), problem-focused versus emotion-focused coping (Lazarus, 1991), and assimilative versus accommodative coping (Brandtstädter, 1992). The primary-secondary control and mastery-meaning strategies may be temporal in nature. For example, 'when individuals first try to alter the demands that are at stake, and, after failing, turn inward to reinterpret their plight and

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find subjective meaning in it' (Schwarzer & Taubert, 2002, p. 4). Brandtstädter's (1992) assimilative and accommodative coping preferences stress on modification. Assimilative coping refers to modification of the environment whereas accommodative coping refers to self-modification. Lazarus (1991) proposed two types of coping, namely problem-focused and emotion-focused coping. Problem-focused coping strategies are efforts to do something active to alleviate stressful circumstances, whereas emotion-focused coping strategies involve efforts to regulate the emotional consequences of stressful or potentially stressful events. According to Folkman and Lazarus (1980) people use both types of strategies to combat stressful events. Studies indicate that problem focused coping (Armeli, Gunthert, & Cohen, 2001; Evers, Kraaimaat, van Lankveld, Jonjen, Jacobbs, & Bijlsma, 2001; Koenig, Pargament, & Nielsen, 1998; Maercker & Langner, 2001) including acceptance, positive reinterpretation and positive religious coping (Koenig et al., 1998) are positively associated with growth. Emotion focused coping including emotional social support is also reportedly positively associated with growth (Maerker & Langer, 2001).

Traditionally coping has been considered to occur in the aftermath of a stressful situation. But now psychologists do talk of proactive coping (Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert, 1999; Greenglass, Schwarzer, & Taubert 1999). Schwarzer (2000) has proposed reactive, anticipatory, preventive, and proactive coping classifying coping strategies into four categories. Proactive coping is inherently different from the remaining three strategies encompassing three distinct features. According to Greenglass (2002), 'it integrates planning and preventive strategies with proactive self-regulatory goal attainment; it integrates proactive goal attainment with identification and utilization of social resources; and it utilizes proactive emotional coping for self-regulatory goal attainment' (p. 41). Further, it also 'incorporates a confirmatory and positive approach to dealing with stressors…[and]… integrates processes of personal quality of life management with those of self-regulatory goal attainment' (Greenglass, 2002, p. 37). It is deemed as future-oriented strategies that synchronize one's resources to deal with stressful life situations before they occur. Inclination towards proactive coping style means that the individual is more resourceful, responsible and principled (Schwarzer, 1999).

Early version of the proactive coping inventory was aiming the evaluation of proactive cognition and positive behaviour towards coping with a 137-item scale comprising of 18 sub-scales. It intended to measure five dimensions (Greenglass, 1998). The present version by Greenglass et al. (1999) consists of 55 items measuring seven dimensions -proactive, reflective, strategic, preventive, instrumental, emotional, and avoidance coping. This is a four-point scale with 1 indicating 'not at all true', 2 'barely true', 3 'somewhat true' and 4 'completely true'. Reverse scoring is done only for items 2, 9, and 14. Higher score represent that the individual concerned is more inclined towards that particular coping style.

Proactive Coping Inventory (PCI; Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert, 1999) was developed and standardized on Canadian (Greenglass, 2002) and Polish-Canadian (Pasikowski, Sek, Greenglass, & Taubert, 2002) samples. Within a decade it has been translated into Arabic (Abdallah & Greenglass, 2005), Chinese

(Cheng & Greenglass, 2006), Czech (Šolcová & Greenglass, 2005; Šolcová, Lukavsky, & Greenglass, 2006), German (Schwarzer, Greenglass, & Taubert, 2000), Spanish (Gutiérrez Doña, Greenglass, & Schwarzer, 2002), Hebrew (Etzion & Greenglass, 2004), Italian (Comunian, Greenglass, & Schwarzer, 2003), Japanese (Takeuchi & Greenglass, 2004), Polish (Sęk, Pasikowski, Taubert, Greenglass, & Schwarzer, 1999), Portuguese (Marques, Lemos, & Greenglass, 2005), Turkish (Uskul, Greenglass, & Schwarzer, 2002), Russian (Utkina, Radionova, & Greenglass, 2005), and Serbian (Djordjevic & Greenglass, 2006). Adaptation of an established scale has certain advantage over developing a new scale. Cross- language instruments give a mutual set of concepts and operational definition besides providing a sense of security when we are going to use an established and valid test (Brislin, 1986). Adaptation of an existing instrument further facilitates comparative cross-cultural studies cutting across national and ethnic boundaries (Hambleton & Kanjee, 1995).

This paper describes the Hindi adaptation and standardization of the PCI. Anticipating that coping is a process that is evident all through the life, this study standardized PCI on a geriatric sample. This was an attempt to provide a tool for assessment of coping strategies and its effect in the elderly population. We developed the Hindi version following all the steps such as forward and backward translations, testing item equivalence with a bilingual sample, and standardization with a separate sample. Although several scales have been adapted and reported till date, we also aimed at bringing forward the comprehensive translations procedures and other ideal steps for test adaptation in accordance with the guidelines of the International Test Commission.

Method

Translation process

Standard guidelines were followed for translation of PCI adhering to the International Test Commission Guidelines (Van de Vijver & Hambleton, 1996). Accordingly repeated forward-backward translation procedure was adopted. Instead of solitary translator method committee approach was followed to reduce the possibility of error (Butcher, 1996). At the first step three native Indians worked as independent translators. They were good at speaking and writing English. At the second step a consensus version of the three translations was developed looking at the language and cultural suitability of the words. At the third step a bilingual professional back-translated the moderated (consensus) version of the original PCI and semantic discrepancies were checked. This step is essential to get an equivalent translation (Butcher, 1996) and determine that items are contextually same or meaningful.

Item equivalence assessment

Respondents and Data Collection: A total of 30 bilingual participants (19 males and 11 females) from Kanpur city of India participated in the study. Their age ranged

between 42-62 years (*M*= 53.23, *SD*= 5.47). Although the participants were not native English speakers they had their entire 17 years of formal education in English medium (mode of instruction and evaluation). The selection was based on the comprehension of both English and Hindi languages. The participants were asked to complete the original English version and the Hindi translated version of PCI with an average of 20 days (*SD*= 5.4). The order of the test language was counterbalanced.

Data analysis and revision

The difference between item raw scores of both language versions were calculated and Wilcoxon matched pairs sighed ranks test was used to test its significance. Of the 55 items, only item 11 had raw score difference significant at .046. Analysis of the translated version of this item indicted the necessity of modification as the meaning of the translated version was presumably the source of difference between the raw scores. Accordingly, this item was changed by another qualifying word. Two language experts were asked to look at this item and suggest more culturally relevant word(s) taking into account understandability and cultural aptness. Re-administration of this item resulted to a nonsignificant *z* score, thus endorsing suitability of the modified sentence (Hindi translation).

Hindi Standardization Participants

The Hindi standardization sample consisted of 330 participants (181 males and 149 females) from Kanpur and Rishikesh cities of India. The mean age and *SD* were 64.94 and 9.84, respectively (Males: *M age*= 63.92, *SD*= 9.84; Females: *M age*= 66.30, *SD*= 9.65). All of them were from middle socioeconomic background. The final Hindi version of the PCI was given to the participants and their responses were analyzed.

Results

To check sample adequacy for factor analysis Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were performed. Further, scree test was also used to determine the appropriate number of factors suitable for retention. The KMO test and Bartlett's sphericity test outcome (KMO= .855, Bartlett's test= 9970.36) was significant (p <.0001). A KMO test of >0.6 represent acceptable result (Pett, Lackey, & Sullivan, 2003). The obtained value was higher than this indicating suitability of the data for factor analysis. Table 1 illustrates the exploratory factor analysis pattern (and structure) coefficients.

Fourteen factors had eigenvalue ≥1. The eigenvalues (and percentage of variance explained) associated with these factors were 11.872 (21.585%), 3.711(6.748 %), 3.239 (5.889%), 2.936 (5.337%), 2.378 (4.324%), 2.268 (4.123%), 2.105 (3.827%), 1.923 (3.497%), 1.826 (3.32%), 1.414 (2.57%), 1.301 (2.365%), 1.238 (2.251%), 1.174 (2.134%) and 1.139 (2.071%). The substantial fall in the percentage of total variance after the

Table 1. Factor analysis pattern (and structure) coefficients*.

Items	Factors													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. I am a "take charge" person.			.729 (.722)											
2. I try to let things work out on their own.			-.763 (-.747)											
3. After attaining a goal, I look for another, more challenging one.			.787 (.826)											
4. I like challenges and beating the odds.			.554 (.656)											
5. I visualise my dreams and try to achieve them.										.521 (.591)				
6. Despite numerous setbacks, I usually succeed in getting what I want.										.670 (.750)				
7. I try to pinpoint what I need to succeed.										.765 (.786)				
8. I always try to find a way to work around obstacles; nothing really stops me.										.713 (.755)				
9. I often see myself failing so I don't get my hopes up too high.										-.478 (-.560)				
10. When I apply for a position, I imagine myself filling it.					-.439 (-.573)									
11. I turn obstacles into positive experiences.					-.771 (-.818)									
12. If someone tells me I can't do something, you can be sure I will do it.					-.783 (-.832)									
13. When I experience a problem, I take the initiative in resolving it.					-.645 (-.711)									
14. When I have a problem, I usually see myself in a no-win situation.											.803 (.858)			
15. I imagine myself solving difficult problems.							.402 (.607)							
16. Rather than acting impulsively, I usually think of various ways to solve a problem.							.640 (.740)							
17. In my mind I go through many different scenarios in order to prepare myself for different outcomes.							.713 (.770)							
18. I tackle a problem by thinking about realistic alternatives.							.705 (.746)							

*Extraction method: Maximum Likelihood; rotation method: Oblimin with Kaiser Normalization.

Table 1. Factor analysis pattern (and structure) coefficients* (cont.).

Items	Factors													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
19. When I have a problem with my co-workers, friends, or family, I imagine beforehand how I will deal with them successfully.							.656 (.669)							
20. Before tackling a difficult task I imagine success scenarios.							.482 (.579)							
21. I take action only after thinking carefully about a problem.						.572 (.617)								
22. I imagine myself solving a difficult problem before I actually have to face it.						.710 (.753)								
23. I address a problem from various angles until I find the appropriate action.						.772 (.806)								
24. When there are serious misunderstandings with co-workers, family members or friends, I practice before how I will deal with them.						.518 (.565)								
25. I think about every possible outcome to a problem before tackling it.														-.357 (-.555)
26. I often find ways to break down difficult problems into manageable components.														-.629 (-.721)
27. I make a plan and follow it.														-.841 (-.859)
28. I break down a problem into smaller parts and do one part at a time.														-.696 (-.771)
29. I make lists and try to focus on the most important things first.									-.767 (-.793)					
30. I plan for future eventualities.									-.662 (-.717)					
31. Rather than spending every cent I make, I like to save for a rainy day.								.419 (.501)						
32. I prepare for adverse events.								.680 (.722)						
33. Before disaster strikes I am well-prepared for its consequences.								.750 (.797)						
34. I plan my strategies to change a situation before I act.								.610 (.717)						
35. I develop my job skills to protect myself against unemployment.	.710 (.771)													
36. I make sure my family is well taken care of to protect them from adversity in the future.	.822 (.852)													

*Extraction method: Maximum Likelihood; rotation method: Oblimin with Kaiser Normalization.

Table 1. Factor analysis pattern (and structure) coefficients* (cont.).

Items	Factors													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
37. I think ahead to avoid dangerous situations.	.780 (.825)													
38. I plan strategies for what I hope will be the best possible outcome.	.545 (.699)													
39. I try to manage my money well in order to avoid being destitute in old age.	.365 (.562)													
40. When solving my own problems other people's advice can be helpful.													.756 (.777)	
41. I try to talk and explain my stress in order to get feedback from my friends.													.785 (.793)	
42. Information I get from others has often helped me deal with my problems.													.672 (.744)	
43. I can usually identify people who can help me develop my own solutions to problems.													.485 (.614)	
44. I ask others what they would do in my situation.				.537 (.617)										
45. Talking to others can be really useful because it provides another perspective on the problem.				.740 (.774)										
46. Before getting messed up with a problem I'll call a friend to talk about it.				.746 (.774)										
47. When I am in trouble I can usually work out something with the help of others.				.662 (.688)										
48. If I am depressed I know who I can call to help me feel better.				.492 (.609)										
49. Others help me feel cared for.												.511 (.592)		
50. I know who can be counted on when the chips are down.												.751 (.786)		
51. When I'm depressed I get out and talk to others.												.667 (.719)		
52. I confide my feelings in others to build up and maintain close relationships.												.522 (.617)		
53. If I am depressed I know who I can call to help me feel better.		.511 (.610)												
54. Others help me feel cared for.		.919 (.908)												
55. I know who can be counted on when the chips are down.		.729 (.792)												

*Extraction method: Maximum Likelihood; rotation method: Oblimin with Kaiser Normalization.

first factor suggested retention of a single factor. However, examination of the scree plot favoured a fourteen-factor solution. The goodness of fit Chi square was 1343.705 (*df*= 765, p <.000) indicating no systematic variance in the reduced R after extraction of the fourteen factors. We also attempted to establish whether the proposed sets of items belonging to a subscale actually loaded on the same factor or not. Unlike few language adaptations (using principal components analysis, PCA), maximum likelihood extraction method with Oblimin rotation method was used for this purpose. This was done in order to maximize common variance, rather that total variance as PCA data reduction method explains optimal total variance in a set of observed variables using a smaller number of components.

Contrary to the proposition of the original scale, a fourteen factor solution emerged out of the factor analysis. Strategic, emotional and avoidance coping subscales retained its status as independent factors. However, our data yielded four factors out of the first fourteen items pertaining to proactive coping subscale of the original PCI. Table 2 summarizes the findings in comparison to the original PCI. A close look suggests that items of factor III (1, 2, 3, and 4), V (items 10, 11, 12, 13 and 14), and X (5, 6, 7, 8 and 9) can be associated to '*self-belief to face the challenges*', '*ways to handle the problems*' and '*success*'. Factor XI had a single item (item 14) and hence was dropped. The eleven items of the original reflective coping subscale got classified into two factors- factors VI and VII. Factor VI (items 15, 16, 17, 18, 19 and 20) is inclined to the '*tendency to solve the problems in many ways*' whereas factor VII (items 21, 22, 23 and 24) can be linked to the notion of '*dealing problems with care and getting success*'. Item 25 was dropped because of low factor loading (-.357). A factor loading equal to or greater than .40 on a factor and no cross loading equal or greater than .40 on any other factor was the criterion for retention of items. Items 26, 27, 28 and 29 measured strategic coping in the original scale. These items (except item 29) remained as a single factor (factor XIV) inclined towards '*strategic planning or a tendency to preplan things*'. Two factors (I and VIII) covered the items pertaining to preventive coping subscale of the original PCI. These factors (factor I: items 35 36, 37 and 38; factor VIII: items 31, 32, 33 and 34) are related to '*readiness or state of being prepared for the problem*' and '*safe and positive planning to face or cope with the problems*'. The factor loading of item 39 was low (.365) and hence it was also discarded. Items 29 (strategic coping) and 30 (preventive coping) got misclassified into one factor (factor IX) in the adapted version. Two of the extracted factors (factors IV and XIII) covered all the items corresponding to instrumental coping subscale of the original PCI. Factor IV (items 44, 45, 46 and 47) and factor XIII (items 40, 41, 42 and 43) shows '*readiness to take others' suggestions*' and the '*tendency to rely on others*', respectively. Item 48 was a part of emotional coping subscale in the original scale. However, it was misclassified in the present analysis and allied along with items pertaining to instrumental coping. The items related to emotional coping subscale emerged as a single factor (factor XII). The items (49, 50, 51 and 52) appear to be related to the tendency of '*depending on another person and need to talk*'. Similarly, only one factor was extracted (factor II) for items corresponding to avoidance coping subscale. The items (53, 54, and 55) pertaining to avoidance coping appears to be related to the '*impending avoidance to deal with the problem*'.

Table 2. Summary of factors, items and Cronbach's α coefficients (original scale and adaptation).

Original Scale		Hindi Adaptation			Original Scale Cronbach's α	
Factors (Items)	Factor No.	Items	Factor Name	α if item deleted	(Canadian sample)	(Polish-Canadian sample)
Proactive Coping 1-14	3	1, 2, 3, 4	Self-belief to face the challenges	.016	.85	.80
	10	5, 6, 7, 8, 9	Success	.509		
	5	10, 11, 12, 13	Ways to handle the problem	.826		
	11	14	-	-		
Reflective Coping 15-25	7	15, 16, 17, 18, 19, 20	Tendency to solve the problems in many ways	.852	.79	.80
	6	21, 22, 23, 24	Dealing problems with care and getting success	.766		
Strategic Coping 26-29	14	26, 27, 28	Strategic planning/ tendency to preplan things	.830	.71	.71
Preventive Coping 30-39	8	31, 32, 33, 34	Readiness or state of being prepared for the problem	.794	.83	.79
	1	35, 36, 37, 38	Safe & positive planning to face or cope with the problems	.869		
Instrumental Coping 40-47	13	40, 41, 42, 43	Readiness to take others' suggestions	.812	.85	.84
	4	44, 45, 46, 47, (48)*	Tendency to rely on others	.826		
Emotional Coping 48-52	12	49, 50, 51, 52	Dependence on others and need to talk	.772	.73	.64
Avoidance Coping 53-55	2	53, 54, 55	Impending avoidance to deal with the problem	.797	.61	.74
Misclassified items	9	(29, 30)	Prioritization & preparedness	.744	-	-

The Cronbach's α coefficients of the Hindi adaptation of PCI are summarized in Table 2. The overall scale reliability was .913. A close look at the factor specific reliability coefficients show two factors (III and X) with low Cronbach's α coefficients. The α for factors III and X were .016 and .509, respectively. For the remaining factors it ranged between .744 - .869. Researchers have endorsed acceptability if the value is .7 or above (McColl, Christiansen, & Knig-Zahn, 1996). Thus, the Hindi adaptation of the PCI shows psychometrically diverse properties than the original scale to certain extent.

Discussion

The purpose of the present study was adaptation and standardization of the proactive coping inventory (PCI) in Hindi language. On the basis of the psychometric standards we checked reliability of the scale and factor analyzed using the maximum likelihood method with oblimin rotation. Fabrigar, Wegener, MacCallum and Strahan (1999) have endorsed maximum likelihood when the data is relatively normally distributed as "it allows for the computation of a wide range of indexes of the goodness of fit of the model [and] permits statistical significance testing of factor loadings and correlations among factors and the computation of confidence intervals" (p. 277). Theories of coping suggest correlation between the factors and hence, the usage of orthogonal rotation could have resulted in loss of some information. On the other hand, theoretically oblique rotation should provide a more accurate solution. It merits mention that orthogonal and oblique rotations generate near-identical solution when for truly uncorrelated factors.

The observed fourteen-factor solution does not extend support to the original number of factors proposed by Greenglass et al. (1999). The results of the factor analysis extracted four factors of proactive coping items of the original scale. Of these, factor XI had a single item. Although some researchers have accepted single-item measures as a valid or adequate proxy measure of a construct, largely it has been considered problematic (Jonason, Izzo, & Webster, 2007). Hence, we have also discarded this factor for reliability analysis. Items pertaining to reflective, preventive and instrumental coping subscales of the original PCI also came forward with two factors each. Items of the strategic, emotional and avoidance coping subscales of the original PCI yielded single factor each. Items 25 and 29 were dropped because of low factor loadings. Of significance was the observation that items 29 and 30 combined to factor IX. Both these items as well as item 48 were misclassified.

It merits mention that the original scale was developed on a Canadian student sample and later validated on a Polish-Canadian student and adult sample who had immigrated to Canada. The Cronbach's α coefficients reported for the original scale as well as the Hindi adaptation (table 2) show low α coefficients for factors III and X. The α coefficient for factor V (.826) seems comparable to that of the items pertaining to proactive coping subscale for the Canadian and Polish-Canadian samples.

Although, the items pertaining to reflective, preventive and instrumental coping subscales of the original PCI also capitulated into two factors each the α coefficients of the original and adapted scales are comparable. Items of the strategic, emotional

and avoidance coping subscales of the original PCI also emerged as single factors in the Hindi adaptation. The observed Cronbach's α coefficients for the present data for strategic coping was higher (.830) as compared to those reported for the original scale (Canadian and Polish-Canadian samples: .71). This was true for emotional (Hindi adaptation: .772; Canadian sample: .73; Polish-Canadian sample: .64) and avoidance coping (Hindi adaptation: .797; Canadian sample: .61; Polish-Canadian sample: .74) also. As the Cronbach's α coefficients mentioned for the original scale were not from the study of senior citizens this could be the possible reason for the differences in the observed coefficient for few of the subscales.

The very fact that the standardization sample for this adaptation represents an older population limits the generalization beyond older people. However, certain aspects of our work carry broader methodological implications. The comprehensive translations procedures (forward-backward translations and moderation) and multiple sources of evidence used to evaluate the translation (bilingual subjects) highlights [possibly] ideal steps for test adaptation. The obtained findings endorse Hindi adaptation of PCI as a potential tool for measuring coping strategies among native Hindi speakers. However, it point toward a careful usage of the tool.

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