

## RESEARCH ARTICLE

# Perceived military to civilian transition-development of conceptual framework and scale for Ex-servicemen

Anirudh Shidganesh\*, Ram Manohar Singh

Department of Humanities and Social Sciences, Indian Institute of Technology Roorkee, Roorkee 247667, India

\* Corresponding author: Anirudh Shidganesh, sshastri@hs.iitr.ac.in

## ABSTRACT

Perceived Military to Civilian Transition is the subjective experience of transition from military institution to the civilian institution due to voluntary or involuntary retirement from military service reflected by changes in vocation, social, health and family domains of life. This study aims to develop a psychometric tool for evaluating Perceived Military to Civilian Transition. Three studies were conducted by cross-sectional surveys (Study 1  $N = 25$ , Study 2  $N = 82$ , Study 3  $N = 400$ ) using the purposive snowball sampling among Ex-Servicemen in India. Study 1–16 Items were generated on 5-point rating scale. Study 2-Items were reduced to 9, based on psychometric scrutiny. First order EFA reveals three latent factors reflecting changes in vocation and health (3 items), family (2 items), and social domain (4 items). Second order EFA confirms presence of one higher order factor. Study 3-CFA performed using ULS estimation method for Higher order model provides empirical support for the PMCT scale having adequate model fit  $Chi.Sq. = 142.29$ ,  $df = 24$ ,  $GFI = 0.99$ ,  $AGFI = 0.98$ ,  $NFI = 0.98$ ,  $RFI = 0.97$ ,  $SRMR = 0.05$ . The 9-item scale possesses satisfactory internal consistency reliability alpha (Study 2 = 0.80, Study 3 = 0.77) and composite reliability omega (Study 2 = 0.79, Study3 = 0.77). This paper contributes a reliable and valid psychometric tool for measuring Perceived Military to Civilian Transition for Indian Ex-servicemen.

**Keywords:** military to civilian transition; military retirement; ex-servicemen; veterans; scale development; Indian ex-servicemen

## 1. Introduction

Professional Military organisations play a critical role in maintaining the nation's territorial integrity. It utilises the physically and mentally fit human resources to perform the noble work of safeguarding the nation. Military organisations are pyramidal, consisting large number of soldiers governed by a small number of well-experienced military commanders. Retirement plays a crucial role in maintaining the large, youthful, experienced and focused force required for executing military operations in the military organisation. Retirement from the military organisation is based on length of service, vacancy available for promotion to higher ranks, age, physical and mental fitness for operational efficiency<sup>[1-3]</sup>. The term 'veteran' and 'Ex-servicemen' are interchangeably used to refer to retired military personnel<sup>[4]</sup>. This paper uses the term Ex-servicemen (ESM) used for designating retired military personnel in India<sup>[5]</sup>. For over a century, military organisations have been involved in the resettlement and rehabilitation of ESMs<sup>[6,7]</sup>. The rehabilitation of ESMs

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is essential for the government and society<sup>[8,9]</sup>. Retirement from the Military organisation accompanies the military to the civilian transition process. Military to civilian transition (MCT) is the vocational, behavioural, psychological and social adaptation of military personnel moving from Military institutions to Civilian institutions due to retirement from the military organisation<sup>[10,11]</sup>.

This paper aims to develop a psychometric tool for understanding and evaluating the subjective experience of ESMs perceived during MCT. Perceived Military to Civilian transition (PMCT) is the subjective experience of transition from military institution to the civilian institution due to voluntary or involuntary retirement from military service reflected by changes in vocation, social, health and family domains of life.

The literature review describes the life course of ESM and changes in broad domains of life during MCT used for operationalising PMCT. It is followed by developing and validating the PMCT Scale in 3 successive studies.

## 2. Literature review

### 2.1. Life-Course of an ESM

The life span of military personnel comprises three unidirectional interconnected phases accompanied by two significant transitions between Civilian and Military Institutions, i.e. the pre-military phase, the military phase and the post-military phase<sup>[12]</sup> as shown in **Figure 1**.

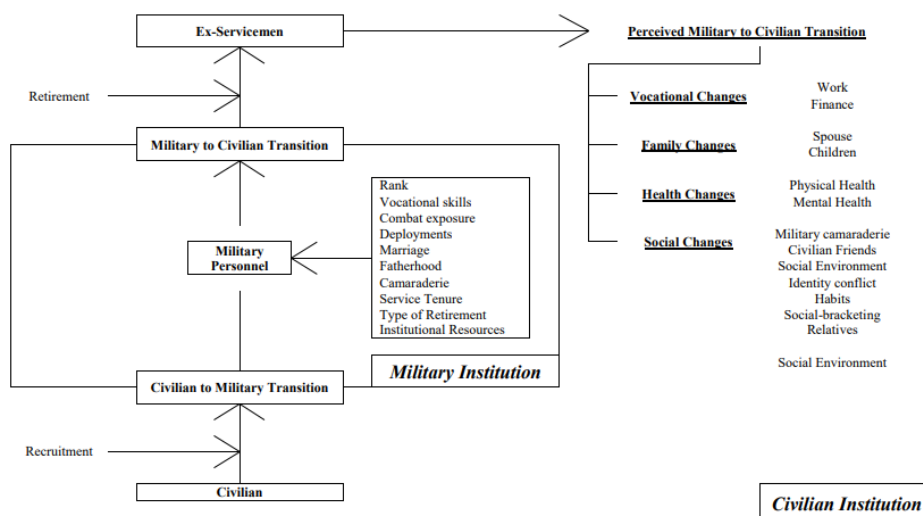


Figure 1. Conceptual representation of military to civilian transition.

#### 2.1.1. Pre-military phase

It is the period from birth until recruitment in the military. Military service is the first profession for most individuals. The recruitment training conducted on joining the Military Institution facilitates the Civilian to Military Transition process necessary for inculcating habits, values, and skills to work efficiently in a Military Institution<sup>[10,13]</sup>.

#### 2.1.2. Military phase

In this phase, the individual becomes military personnel rendering his services for safeguarding the nation from threats. The Military Institution is a ‘total institution’ with a distinct identity, culture, and norms governed by the state for providing apolitical professional military services for maintaining national security<sup>[13]</sup>.

The oscillating deployment cycles between combat field areas and peace locations are a distinguishing feature of serving in the Military Institution<sup>[1]</sup>. Deployments involve shifting from one geographical location

to another. It results in frequent family separations, forming a temporary new non-military social circle and disengagement with the social circles formed at the previous deployment location<sup>[14,15]</sup>.

The presence of family is only possible during leaves and deployment to peaceful locations having family accommodation. The military personnel and his family are exposed to the diverse socio-cultural environment due to deployments at different locations. Military institutions provide military families residing in cantonments or near military bases with a secure environment and essential services like transportation, canteen, grocery, healthcare, and education<sup>[11]</sup>. During the absence of military personnel, the spouse handles household, parenting and family responsibilities<sup>[14]</sup>.

The function of deployments at the peace location is to provide training, upgrade skills and prepare the military personnel for combat operations. It also functions to restore the military personnel's health after returning from field deployment. Deployment at a peaceful location is succeeded by combat field deployment. The combat field area in this paper refers to an active war zone, low-intensity conflict area or a peacekeeping mission. The military personnel develop behaviours like hyper-alertness, aggression, group cohesiveness, and altruism required to deal with life-threatening combat experiences in a combat field<sup>[10]</sup>. These behaviours are channeled with a strictly regimented lifestyle, disciplined routines, and hierarchical command and control in the Military Institution for performing successful military operations. The shared experiences and realities develop a collective identity and camaraderie among the closely-knit team of military colleagues<sup>[13]</sup>. Military colleagues and family remain the closest social circle during military service. Due to the closed and self-sufficient Military Institution, the military personnel stays alienated from the mainstream society during his military service<sup>[10,16]</sup>.

### **2.1.3. Post-military phase**

In this phase, the individual returns to the Civilian Institution after retirement from the Military Institution, leading to an experiential change in institutional lifestyle and culture. Retirement from the military triggers significant changes in relationships, routines, roles that vary between military and civilian society and generates socio-economic and psychological changes along with shifting of identity, recognition, professional role, peers and lifestyle<sup>[1,4,5]</sup>. The ESM carries the identity, lifestyle, vocational skills and psychosomatic experiences of military operations formed during military service from retirement until his death.

## **2.2. Military to civilian transition**

MCT preparation begins during the pre-retirement phase within the Military Institution, and adaptation continues in the Civilian Institution. The transition from military institution to civilian institution requires simultaneous adaptation to changes experienced in multiple aspects. Transition in four broad domains of life can be used to classify and explain the changes experienced during MCT as shown in **Figure 1**.

### **2.2.1. Vocational changes**

The ESM experiences a sharp decline in his income source as pension replaces the salary. An unemployed ESM is solely dependent on his pension<sup>[5]</sup>. Retirement from Military Institution instigates a forced career change for re-employable ESMs. To find a job in the civil market, different from the pre-retirement phase, is a new experience for most ESMs. The search for a second career to support the financial needs is necessary for the ESM retiring at a productive and re-employable age<sup>[9]</sup>. The vocational skills from the pre-military phase to the post-military phase are developed according to courses studied in military training institutions. To secure a second career, ESM depends on the educational qualification earned during or before joining service, along with the skills and experience gathered during military service. The ESM must learn and unlearn skills to compete with younger and more qualified civilians for a second career<sup>[5,17]</sup>. ESM exploring a new career

opportunity different from his military job profile experiences a challenge as well as an opportunity to acquire and master completely new vocational, educational and social skills at midlife. The second career with good income is an opportunity for personal and financial growth, but re-employment with an insufficient income source is a distressing experience for an ESM<sup>[5]</sup>.

### **2.2.2. Family changes**

Retirement ceases the frequent family separations due to deployments during military service. After retirement, ESM spends relatively more time with the spouse, children, and family members. ESM thus readjusts the regimented behaviour and institutionalised military habits to acclimatise in the family environment<sup>[14,15]</sup>. Increased participation in household activities, parenting, and maintaining social relationships provides an opportunity to explore differences and similarities in perspectives, opinions and execution of day-to-day tasks with the spouse<sup>[11]</sup>. Depending upon the interpersonal dynamics and compatibility shared between ESM and the spouse, an ESM may experience a harmonious or conflicted marital relationship. Active participation in parenting provides an opportunity to develop a closer and healthier relationship with the children<sup>[15]</sup>. In the initial phase, an ESM may experience transformation in the child's behaviour towards him due to his active participation in parenting and moulding the child's behaviour, inculcating values and discipline earlier solely managed by the spouse<sup>[14]</sup>.

### **2.2.3. Social changes**

Change in social behaviour i.e. interpersonal communication, participation in social activities, interaction with community members is also the consequence of changes in vocation, family and social environment during MCT<sup>[4,5]</sup>. The military provides a self-contained system with a defined group identity, rank hierarchy, work roles and shared goals that differentiate it sharply from the civil society<sup>[13]</sup>. The new colleagues in the second career replace the military colleagues.

While retirement reduces engagement with the serving military colleagues, it provides ESM with an opportunity to spend time with old friends, make new friends outside the Military Institution and strengthen his existing social network. The vacuum created by the absence of military colleagues is fulfilled by connecting with other ESMs who share a similar identity, familiar themes to talk and similar experiences and realities that seem to be absent with Civilian friends<sup>[10,17]</sup>. The reconciliation process involves reorienting existing relationships with old civilian friends and relatives. It includes building new social relationships with individuals sharing similar political socio-cultural ideologies, values, hobbies, interests, community identity, family identity in the Civilian Institution. It consists of understanding and acclimatising civilian life realities and societal changes unexplored during Military service. The emotional and social support from relatives and friends helps achieve successful MCT<sup>[11]</sup>.

A continuous reevaluation and restructuring of identity and habits occur at the cognitive and behavioural levels. Identity conflict and social bracketing from others are experienced by most military personnel moving into new civil occupations leading to an experience of adjustment difficulties<sup>[4,18]</sup>. Due to the long habit of living in military culture since a young age, the ESM may find it difficult to relate to his civilian counterparts' conversations, jargon, and shared experiences<sup>[17]</sup>. While Some qualities of ESM like punctuality, loyalty, self-discipline, grooming, body language and structured way of working are socially desirable in the civilian environment and workplace; other qualities like strict command and control, hyper-alertness, aggression learnt for combat operations can be a misfit for family, vocation and social life<sup>[18]</sup>.

### **2.2.4. Health changes**

MCT is a stressful life event. It affects the physical and mental health of an ESM<sup>[19]</sup>. The ESM experiences changes in lifestyle habits as he plans daily routine according to new vocation's demands<sup>[17]</sup>. Studies have

reported the prevalence of psychological and somatic health problems among ESM carrying experiences of combat stress, moral injuries, substance abuse, depression, sleep disorders, post-traumatic stress<sup>[2,4,19]</sup>. The transition itself is a stressor that can be either eustress or distress, affecting the health of ESM. Changes in physical and mental health are an essential outcome measure to understand the subjective experience of MCT in ESM.

### **2.3. Military to civilian transition in India**

The Indian armed forces consist of approx. 1.5 million personnel. Annually approx. 60,000 ESM join India's pre-existing pool of 2.7 million ESMs<sup>[3]</sup>. Most ESMs retire at the re-employable age of 35–45<sup>[9]</sup>. The military personnel complete a pre-retirement training programme before departing from the Military Institution. The program intends to make the ESM aware of the various policies and Institutional support provided by the Government of India and the process to avail it. The MCT process is supported primarily in India through the pre-retirement training and post-retirement re-employment programmes and resettlement schemes.

### **2.4. Existing measures**

MCT has been an area of academic interest for a long time<sup>[4]</sup>. Globally, psychometric tools have been explicitly developed and used for ESMs within the context of MCT<sup>[20–22]</sup>. Quantitative studies on MCT in India have employed tools developed for the civilian population to measure variables like adjustment and well-being<sup>[16,23]</sup>. MCT research in India has not been reported using reliable and valid psychometric tools developed explicitly for MCT among ESMs.

## **3. Materials and methods**

This study aims to develop a psychometric tool for measuring Perceived Military to Civilian Transition (PMCT) quantitatively in ESMs from Indian Armed Forces. The development and validation of the PMCT scale were conducted in three stages:

### **3.1. Study 1: Item generation**

This study aimed to develop a comprehensive preliminary PMCT scale with a simple, distinct, and well-articulated pool of items.

#### **3.1.1. Tools**

India has a vast geographical diversity and the online data collection method facilitated the participants throughout India to be included in the study. The majority of Indian families are joint families, the roles of blood relatives in social support, social engagement plays an important role. Thus, items in social domains were constructed to tap the joint family structure specifically addressing the socio-cultural aspects of Indian culture.

The preliminary PMCT scale consisted of 16 items simultaneously generated from the four broad domains in English and Hindi. Eleven items reflected the degree of agreement with changes experienced in the vocation, i.e. work, finance; health, i.e. daily routine, physical health and mental health; family, i.e. marital relationship, parenting and social domains, i.e. relationship with military friends, relationship with civilian friends and social environment. Three items reflecting social changes were structured to evaluate differences between self and others, difficulties experienced in adaptation, and experiencing social bracketing from others. Two global items reflected overall life satisfaction and will to serve the Military Institution over Civilian Institution as shown in **Table 1**.

**Table 1.** 16 items of Preliminary PMCT scale.

Domain	Item no.	Item
CAREER	PMCT03	I have experienced changes in work-life after retirement.
	PMCT04	I have experienced changes in financial condition after retirement.
FAMILY	PMCT10	I have experienced changes in marital relation with my spouse (wife/husband) after retirement.
	PMCT13	I have experienced changes in relationship with my children after retirement.
HEALTH	PMCT01	I have experienced changes in my daily routine after retirement.
	PMCT02	I have experienced changes in physical health after retirement.
	PMCT12	I have experienced changes in mental health after retirement.
SOCIAL	PMCT07	I have experienced changes in my relationship with serving military friends after retirement.
	PMCT08	I have experienced changes in my relationship with civilian friends after retirement.
	PMCT09	I have experienced changes in my social environment after retirement.
	PMCT14	I have experienced changes in relationship with my relatives after retirement.
	PMCT05	I feel different from civilians due to military identity and habits (like honesty, discipline, command control, way of doing things).
	PMCT06	I find it challenging to adapt in civil life due to military habits (like honesty, discipline, command control, way of doing things).
GLOBAL	PMCT11	People behave differently with me due to my identity with military background.
	PMCT15	Life in the military was better than life after retirement.
	PMCT16	I wish to live the military life again.

\*Scoring: Completely disagree=1, Slightly disagree=2, Neither Agree nor Disagree=3, Slightly agree=4, Completely agree=5.

### 3.1.2. Participants and procedure

25 Ex-servicemen were contacted in person and requested for participating in the study. The descriptive are shown in **Table 2**.

**Table 2.** Demographic details of participants in Study 2 and Study 3.

	Study 1		Study 2		Study 3	
	N	%	N	%	N	%
<b>Branch</b>						
Army	19	76.00	17	20.73	168	42.00
Air Force	04	16.00	42	51.22	126	31.50
Navy	02	08.00	23	28.05	106	26.50
<b>Rank</b>						
NCO	10	40.00	55	67.07	160	40.00
JCO	11	44.00	23	28.05	121	30.25
Officer	04	16.00	04	04.88	119	29.75
<b>Educational Qualification</b>						
High School	-	-	-	-	096	24.00
Graduates	-	-	-	-	127	31.75
Post-graduate & above	-	-	-	-	177	44.25
<b>Employment Status</b>						
Re-employed	-	-	-	-	254	63.50
Unemployed	-	-	-	-	069	17.25

**Table 2.** (Continued).

	Study 1		Study 2		Study 3	
	N	%	N	%	N	%
Retired	-	-	-	-	077	19.25
<b>Age</b>						
Min	34	-	32	-	33	-
Max	74	-	75	-	85	-
Mean	47.40	-	54.77	-	55.67	-
<b>Years of Service</b>						
Min	10	-	10	-	1	-
Max	39	-	39	-	39	-
Mean	23.60	-	20.10	-	22.82	-

### 3.1.3. Analysis and results

The participants examined and proofread the 16 items to reduce ambiguity, increase comprehensibility and evaluate the appropriateness of items. Grammatical changes were made for improving clarity and comprehensibility. Suggestive words were added to the bracket to clarify three items in social changes. The participants were asked the best response scale from 5-point, 7-point, 9-point rating scales. All the participants preferred the 5-point rating scale. All 16 items were retained with a 5-point rating scale, as shown in **Table 1**.

### 3.2. Study 2: Item reduction

This study aimed to empirically reduce and retain minimum items reflecting the four domains for measuring PMCT.

#### 3.2.1. Tools

A google form was created consisting of the consent form, 16 items PMCT scale and demographic details about participant's age, rank, the branch of service, years of service in armed forces, and years of retirement.

#### 3.2.2. Data collection

The google form was circulated to Ex-servicemen using the snowball sampling technique through social media channels of Ex-servicemen groups. 94 participants voluntarily responded to the PMCT scale. 10 responses with service less than 15 years and retired after 2020 were excluded. The sample consisted of 82 ESMs retired between 1977 to 2019. The demographic details of participants are provided in **Table 2**.

### 3.2.3. Analysis and results

The analysis of data was done using SPSS 28 Trial version. The Cronbach Alpha was calculated to estimate internal consistency reliability within the 16 Items. The Items PMCT01 and PMCT16 were removed due to low corrected item-total correlation (below 0.3), indicating low consistency. The first order and higher order exploratory factor analysis (EFA) was performed using unweighted least square (ULS) estimation with direct Oblimin rotation on the 14 internally consistent items. The ULS estimation facilitates performing factor analysis on items violating multivariate normality and factors consisting of two to three indicators, i.e. vocation, family and health. Direct oblimin rotation facilitates the extraction of co-related factors<sup>[24]</sup>. The item to sample size ratio of 1:5, KMO sampling adequacy (above 0.60) and significant Bartlett's test for sphericity ( $p < 0.001$ ) indicated sample size was adequate for EFA. In the first round of EFA factor loading of PMCT05, PMCT15 show low factor loading, i.e. below 0.50, indicating less contribution of items to the underlying factor. PMCT09, PMCT12, PMCT14 indicate cross-loading of items, i.e. the single item explains two distinct factors

inferred by a difference of less than 0.20 between factor loading. The Second round of EFA was performed on the remaining 9-Items after excluding cross-loading and low loading items.

The second round for First-order EFA indicates three latent Factors, shown in **Table 3**. Factor 1 comprises three items, PMCT02, PMCT03, PMCT04, reflecting changes in health and vocation. Factor 2 comprises four items, PMCT07, PMCT08, PMCT06, PMCT11, reflecting changes in the social domain. Factor 3 comprises two items, PMCT10 PMCT13 reflecting changes in the family. The inter-factor correlation matrix displays correlation within the factors. The higher-order confirmatory factor analysis was performed using the inter-factor correlation matrix to explore the proposed Higher-order construct of PMCT. The results indicate that the 3 factors reflect a single higher-order construct of PMCT. The final 9-Items multi-domain PMCT scale and its subscale possess adequate internal consistency reliability (Cronbach alpha > 0.70) and composite reliability (Omega = 0.79), as shown in **Table 3**.

**Table 3.** Item Reduction (Study 2).

Items	Reliability	First Order Factors			Higher order factors		
	Mean ± SD	CITC	F1	F2	F3	Items	HF1
PMCT02	4.17 ± 1.42	0.50	0.66	0.40	-0.29	F1	0.63
PMCT03	4.48 ± 1.10	0.32	0.69	0.14	-0.20	F2	0.44
PMCT04	4.56 ± 1.11	0.38	0.79	0.18	-0.26	F3	-0.65
PMCT06	2.98 ± 1.73	0.50	0.32	0.62	-0.19	-	-
PMCT07	3.18 ± 1.76	0.51	0.06	0.77	-0.34	-	-
PMCT08	3.39 ± 1.73	0.64	0.17	0.87	-0.42	-	-
PMCT11	3.46 ± 1.68	0.51	0.28	0.55	-0.32	-	-
PMCT10	3.54 ± 1.77	0.52	0.28	0.35	-1.00	-	-
PMCT13	3.18 ± 1.79	0.55	0.30	0.40	-0.72	-	-
Estimation—Unweighted Least square with Direct Oblimin rotation, Factor Retention-Eigenvalue greater than 1							
Alpha	-	0.80	0.75	0.79	0.84	-	-
Omega	-	0.79	-	-	-	-	-
KMO test of sampling adequacy				-	0.68	-	0.62
Bartlett's test of sphericity			Chi Sq.	-	276.45	-	58.85
			Df	-	36	-	3
			Sig.	-	<0.001	-	<0.001
Total variance explained			-	-	58.72 %	-	33.51 %

\*SD=Standard Deviation, CITC=Corrected Item-Total Correlation, F1=Factor 1, F2=Factor 2, F3=Factor 3, HF1=Higher Factor 1.

### 3.3. Study 3: Establishing psychometric properties of 9 item PMCT scale

The study was performed to validate the psychometric properties of the PMCT scale.

#### 3.3.1. Tools

The google form consisted of the consent form, demographic details and PMCT scale. The demographic details consisted of gender, educational qualification, employment status, marital status, parenting status, participant's age, rank, the branch of service, years of service in armed forces and year of retirement from armed forces.

#### 3.3.2. Data collection

The google form was circulated using the snowball sampling technique among ESM from various ESM



organisations in India. The questionnaire was circulated to the participants with the help of social media, emails, SMSs. 444 participants voluntarily responded to the study. The online forms can consist of re-entered, multiple entries that needs to be filtered out. The social desirability can occur in scale responses. 21 technically fallible responses were discarded. 413 valid responses were suitable for data analysis.

1 response of a female ESM (insufficient demographic category) was excluded from the study. Items on family transition are valid for married fathers; hence responses of 1 bachelor, 7 Widows and 4 Non-parents were excluded from the study. The statistical analysis was performed on the remaining 400 participants who retired between 1971 and 2020. The demographic details of the participants are provided in **Table 2**.

### 3.3.3. Analysis and results

The analysis of data was done on SPSS Amos 27, SPSS 28 Trial version and MS Excel 2016. Confirmatory factor analysis was performed using the ULS estimation method to establish the construct validity of the PMCT Scale as shown in **Table 4**. The model fit was estimated for the three-factor first-order model and Higher-order model. The three-factor first-order model and Higher-order model indicates good model fit with  $GFI > 0.95$ ,  $AGFI > 0.95$ ,  $NFI > 0.95$ ,  $RFI > 0.95$  and  $SRMR < 0.80$ . The Construct reliability and Average variance extracted was calculated to establish Convergent validity and Divergent validity using Fornell-Larcker Criterion for the Three-factor model. The PMCT scale for the three-factor model indicates a good model fit but poor convergent and discriminant validity. The model with a higher-order construct shows a good fit, supports the operationalised definition and confirms the construct validity from Study 2. The higher-order model shows adequate first-order factor loadings ( $>0.60$ ), average variance ( $AVE > 0.50$ ) and construct reliability ( $CR > 0.70$ ) of PMCT. The reliability was calculated using Cronbach alpha for internal consistency reliability and Omega for composite reliability. The 9-item scale has good internal consistency reliability ( $>0.70$ ) and composite reliability (Omega = 0.77).

**Table 4.** Establishing psychometric properties of PMCT scale (Study 3).

Construct	Item	Mean	SD	CITC	Std. Estimate	CR	AVE	Alpha
Health and vocational transition	PMCT02	3.78	1.43	0.42	0.60	0.55	0.29	0.57
	PMCT03	4.57	0.96	0.35	0.47	-	-	-
	PMCT04	4.26	1.25	0.39	0.54	-	-	-
Social transition	PMCT06	3.79	1.46	0.45	0.52	0.66	0.34	0.65
	PMCT07	3.29	1.56	0.44	0.54	-	-	-
	PMCT08	3.27	1.58	0.65	0.83	-	-	-
Family transition	PMCT11	3.60	1.45	0.31	0.36	-	-	-
	PMCT10	2.63	1.66	0.55	0.82	0.80	0.67	0.80
PMCT	PMCT13	2.66	1.68	0.54	0.81	-	-	-
	Factor 1	-	-	-	0.74	0.84	0.64	0.77
	Factor 2	-	-	-	0.95	-	-	-
	Factor 3	-	-	-	0.69	-	-	-
Model	Chi.sq.	Df	GFI	AGFI	NFI	RFI	SRMR	
Three Factor	142.29	24	0.99	0.98	0.98	0.97	0.05	
Higher order	142.29	24	0.99	0.98	0.98	0.97	0.05	

\*SD=Standard Deviation, CITC=Corrected Item-Total Correlation, CR=Construct reliability, AVE=Average variance extracted.

## **4. Discussion**

This study addresses the need for a psychometric tool to measure PMCT for Indian ESMs. This paper provides a comprehensive review of life-course of ESM and a comprehensive framework for PMCT. PMCT is operationalised as a higher-order construct reflected by indicators observing changes in the family, social, health and family domains. A short 9 items 5-point rating multidimensional self-reporting scale to quantify the PMCT has been developed from the operationalised PMCT construct. The development of the PMCT scale consisted of three interconnected studies. A preliminary 16 item scale is developed in Study 1. It is reduced to 9 items based on the corrected item correlation and EFA results in Study 2. Study 3 confirms and validates the results of Study 2. It is a short measure of PMCT reflecting the multiple domains with minimum items. It does not intend to provide an in-depth description of each domain. The multi-domain overlap between the factors is indicated by correlation in the inter-factor correlation matrix in first-order EFA and low discriminant validity in CFA. Scores of factors should not be used independently due to the low number of items in Factor 1 and Factor 3. Health and vocation are separate domains, but they form a single factor. This is due to the correlated nature of multi-domains that aggregately reflect PMCT.

The tool is reliable to measure the PMCT as displayed by adequate internal consistency reliability, composite reliability and construct reliability in study 2 and study 3. The Higher-order EFA and CFA in studies 2 and 3 support the construct validity of operationalised PMCT. The researchers are advised to use the summated scores or obtain higher-order factor scores for Higher-order PMCT construct using SEM software to perform the statistical analysis while studying PMCT. The scale explains sufficient variance and can help understand the differences among demographically different ESMs, cause-effect between PMCT and well-being. The results of the overall scale can be used to predict the experience of PMCT among ESM. The lower scores indicate the lesser experience of changes in life during MCT. The higher scores on PMCT describe experiencing more changes in the vocation, social, family and health domains in life. Based on evaluating the quality of changes, i.e. eustress or distress, the ESM can provide guidance, support and intervention to deal with MCT.

## **5. Limitations**

This study intends to develop a comprehensive short self-report psychometric tool for ESMs. However, the conceptual framework of the study defines family consisting of spouse and children. Thus, the bachelor, widowed, divorced, non-parents ex-servicemen have not been included in the sample of this study. On the similar lines the demographic groups of women ESMs have been excluded due to small representation of the sample in the participants. Future studies should remove the items irrelevant to female ESMs, ESMs without a spouse or children should validate the scale for research on the populations for utilising the tool in their studies.

The validation of scale and interpretation of scores should be performed using the methods done in scale development. Since, the items are rated on an ordinal scale, the unweighted least square method of estimation has been used for both EFA and CFA. The future studies intending to use estimation methods like CFA can consider increasing the scale point or using a semantic differential scale. The study reports a single higher order-factor consisting of the co-related first-order factors. The overlap of factors at first order is the consequences of interplay due to co-dependence between the subdomains of PMCT as explained in the conceptual framework. The interpretation of the scores should be based on the summated scores of overall scales representing solely the higher order factor for interpretation of results.

## 6. Conclusion

ESMs successfully transitioned during MCT are a valuable human resource for the growth of a nation. The present study provides a reliable and valid psychometric tool to measure PMCT among ESMs from Indian Armed Forces. It is helpful for researchers, policymakers, health care workers dealing with ESMs during MCT for gaining insight into the subjective experiences of MCT among ESMs. It will facilitate conducting context-specific valuable research for the ESMs population in India.

## Author contributions

Conceptualization, AS and RMS; methodology, AS and RMS; software, AS; validation, AS; formal analysis, AS; investigation, AS; resources, RMS; data curation, AS; writing—original draft preparation, AS; writing—review and editing, AS and RMS; visualization, AS and RMS; supervision, RMS; project administration, AS and RMS; funding acquisition, AS and RMS. All authors have read and agreed to the published version of the manuscript.

## Conflict of interest

The authors declare no conflict of interest.

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