Swadhyaya Scale: An Indian Perspective

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ABSTRACT

Aim of the present paper was to develop a test on Swadhyaya (Self-study) defined in Indian philosophical and religious scriptures. The study was conducted in two phases; 150 participants (M =133 and F= 17) with age range=17-54 yrs. (M = 21.43 yrs., & SD= 6.79) in the pilot study and 491 participants (Male= 310 & Female =181) with 18 – 70 years age range (M=32.16 yrs. & SD= 10.92) in the main study. Three factors solution was finalized through exploratory factor analysis; Study of Scriptures, Self-introspection and Self-discipline with 55.74 % of total variance. Scale of Positive and Negative Experiences and Flourishing Scale (SPANE & FS,Diener et. al., 2010) and Sukha- Dukha scale (Singh, Raina and Sahni, 2016) were used to establish concurrent validity. The scale was found psychometrically robust with high internal consistency (α=0.79) and acceptable concurrent validity as significant positive correlations of Swadhyaya and its factors with Sukha, SPANE-P and FS were obtained.

Keywords: Swadhyaya, Sukha-Dukha, Positive & Negative Experiences, Flourishing

In eastern philosophy, *Swadhyaya* is practiced in many forms. Sometimes it is also understood as the study of scriptures and books. One form of *Swadhyaya* is mantra meditation, where certain sound or words with meaning are recited, anchoring the mind to one thought (Asara, 2008). This practice helps draw the mind away from outward-going tendencies, silencing the crowding of thoughts, and ultimately towards inward feeling of resonance. It can alternatively be any music, sermon, chant, inspirational book that absorbs the person. In another form it is practiced as a self-reflection process, where one silently meditates in *Asana* on one's own behaviours, motivations and plans. Self-study is contemplation of one's own motives and behaviors and one's circumstances and the surrounding environment. Such practice provides a direction and keeps us on the right track (Saraswati, 2005). It helps self- introspection - assessing aim and direction of one's life and how desirable changes may lead to a more fulfilling self (Hixon& Swann, 1993). In this process of reorientation, *Swadhyaya* appears as self-discipline, such as perseverance, restraint, endurance, thinking before acting and as the ability to carry out one's decisions and plans, in spite of inconvenience, hardships or obstacles. When in practice,

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Swadhyaya helps to strengthen self-control, decisiveness and determination. It develops patience and perseverance and helps one get rid of negative habits. This disciplines oneself towards forgoing immediate gratification, to achieve greater and more satisfying goals in the long run (Sasson, 2016; Mischel, Cantor and Feldman, 1996), often defined as self –control- an ability to inhibit or overrule immediate urges to attain a long term goal (Carver & Scheier, 1981, 1982; De Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012; Metcalfe & Mischel, 1999; Vohs & Baumeister, 2004). Such type of self- control is of invaluable importance for well- being (Gillebaart and Ridder, 2015). In line with this notion, many studies have demonstrated that the ability to self-control is vital for human functioning and that it leads to improved work and academic performance, more satisfying relationships, and basically healthier and happier lives (e.g., Duckworth & Seligman, 2005; Hofmann, Luhmann, Fischer, Vohs, & Baumeister, 2014; Mischel, Shoda, &Peake, 1988; Tangney, Baumeister, & Boone, 2004).

There has been research which shows self – control to be the only one among 32 measured personality variables (e.g., self-esteem, extraversion, energy level) that predicted performance of college students in terms of grade point average (GPA) more robustly than any IQ test scores did. (Wolfe and Johnson, 1996). In a similar study it was found that self-discipline predicted overall academic performance more robustly than did Intelligence test (Duckworth and Seligman, 2005). Self-discipline also correlates positively with self-reported grades, as well as a broad array of personal and interpersonal strengths, (Tangneyet al, 2004)

Further, Self-determination theory (SDT) (Ryan & Deci 2000) has embraced the concept of eudaimonia, or human flourishing, as a central definitional aspect of well-being. SDT posits that feeling both relatively more positive affect and less negative affect do frequently point to psychological wellness for, as Rogers (1963) suggested, emotional states are indicative of organismic valuation processes. That is, introspection of positive and negative affect is useful in appraisals of the relevance and valence of events and conditions of life with respect to the self. Diener et al (2010) reiterated that human flourishing encompasses purpose in life, relationships, self-esteem, feelings of competence, and optimism. Whereas happiness results from a balance between positive and negative affect also. The inclusion of both general and specific feelings may reflect a wide range of respondents' emotions and feelings regardless of their culture, (Diener et al 2010).

Although in the west, related concepts like self-discipline self- control and self-introspection are widely researched. However there remains a gap to study and understand these concepts and their measures on a broader ambit of *Swadhaya*in the Indian context. In the present paper, we develop a scale to measure *Swadhyaya* and to study its validity by using various well-being (WB) tests such as *sukha – dukha* scale based on Indian philosophical/religious WB concept (Singh, Raina and Sahni, 2016) , flourishing scale and negative and positive experience scales (Diener et al 2010). It was hypothesized that *Swadhyaya* and its factors would be positively

correlated with *Sukha*, positive experiences and flourishing and negatively correlated with negative experiences and *Dukha*.

METHOD

The study was conducted in two phases namely; a pilot study and the main study. The pilot study was further subdivided into four steps namely; (i) item generation, (ii) item review, refinement and modification (iii) assessment of psychometric properties. The main study comprised of item analysis, exploratory factor analysis and concurrent validation of the scale. This methodology ensured that the items retained at the end of the scale were reliable and valid.

PHASE 1: PILOT STUDY

In this phase, item generation, item review, item refinement, item modification and psychometric properties of the items were studied. Indian philosophical/religious texts describing *Swadhyaya* was referred along with yogic literature such as *Patanjali Yoga* Sutras. The various connotations of *Swadhyaya* like self-study, self-discipline, self-awareness and introspection were also included in the review of literature for item generation.

Item Generation

On the basis of the extensive review of literature a pool of 22 potential items in Hindi language to find out the extent to which our participants perceive *Swadhyaya*.

Item Review, Refinement and Modification

First of all, content validity of the scale was established. Four subject experts reviewed the items in the context of their clarity (Visser, Krosnick, and Lavrakas, 2000), readability level and their relevance for the purpose on a four point rating scale with 1 as "least relevant" to 4 as "most relevant". Items were screened based on qualitative feedback on content and quantitative scoring with Content validity index CVI > 0.75 (Yaghmaie, 2003). One item was deleted based on this criteria. The item was also perceived to be difficult in understanding by 2 of the experts for an average Hindi speaking population. Thus, the scale comprised of remaining 21 items.

Participants & Procedure

One hundred and fifty participants, 17 female (11.3%) and 133 male (88.7%) participated in the pilot study. The age range was 17 to 54 years with mean age 21.43 yrs. and SD= 6.79. Only 12 participants were working while rest of 138 participants were college going students and 7 participants were married whereas 143 participants were unmarried.

Front page of the questionnaire had questions on demographic information (e.g. age, gender, marital status and occupation) and consent form. Participants were asked to rate the degree to which they experience or practice *Swadhyaya* in their lives on a 5 point scale from 1 (never) to 5 (always). Data was collected on Hindi speaking population.

Data Analysis & Results

The data were analyzed using SPSS version 17.0. The data were screened to check the minimum (1) and maximum (5) values. SPSS preliminary frequency output was analysed for missing values. Frequency analysis for each item indicated that responses for each domain had minimum and maximum values with the range of 1–5. The percentage of missing values was under 5% and random in nature. The missing data was replaced by the series mean method. Then, descriptive analysis and exploratory factor analysis was calculated.

Items were screened for outliers on the basis of mean and standard deviation (SD). For the robustness of the scale a strict criteria of Mean acceptable range 2-4 and SD>1.0 (Jackson 1970) was followed and *Swadhyaya* items had a mean range of 2.23-3.86 and SD of 1.05-1.55. All the items were also found within limits for skewness and kurtosis (Sk< 2.0, Tabachnick & Fidell, 1996) and (K< 7.0, Finch, 1996). Corrected item-total correlation ranging from r = 0.24 to 0.69 (< 0.20, Kline, 1993) and all Alphas for if-item deleted were high (above α = .86) Thus all items were retained for further analysis at this stage.

Factor Analysis was conducted and the KMO (0.87) and Bartlett Measure of sampling adequacy (p < 0.01) was found to be very good (> 0.80, Field, 2004). Factor analysis was applied with Principal Component Analysis with Varimax rotation. Five factors emerged with > 1 eigen value which explained 60.43 % of total variance. However, factor solution was not finalized at this stage.

PHASE 2: MAIN STUDY

The aim of the study was to reassess the psychometric properties and validate the scale with 21 items from pilot study and to explore a final factor solution.

Participants and Procedure

Five hundred participants were recruited for the study out of which 9 were rejected due to incomplete data. Remaining data of 491 participants from urban and semi urban settings comprised of 181 female and 310 male. Age range was from 18 – 70 years (M =32.16 yrs. and SD=10.92). 76.7% participants were married.

A booklet, containing demographic sheet, consent form, newly developed 21 items *Swadhyaya* scale with selected scales for validation, was used in Hindi for data collection.

Measures used for Swadhyaya scale validation

Scale of Positive and Negative Experiences (SPANE, Diener et. al., 2010): SPANE is a 12 item scale that is rated on 5 point Likert scale. Singh (2014) has translated the scale in Hindi and found thorough psychometric properties of the Hindi translated version with Cronbach Alpha for

SPANE P α = 0.69 and SPANE N α = 0.69. Alpha Reliability of SPANE P α = 0.87, SPANE N and α = 0.76 was found in the current study.

Flourishing Scale (FS; Diener et al., 2010): This is an 8 items scale that provides one factor of the positive human functioning. The scale was found to have acceptable Cronbach's alpha reliability α=0.87 (Diener et al. 2010). Singh (2014) has translated the scale in Hindi and found thorough psychometric properties of the Hindi translated version with very good Cronbach and in the present study α was 0.93.

Sukha- Dukha **scale (Singh, Raina and Sahni, 2016):** This is a 41 items scale, 19 items for *sukha* and 22 items for *dukha*. The scale had very good reliability for *sukha* α=0.85 and *dukha*α=0.91 (Singh, et al 2016).

ANALYSES & RESULTS

The data were analyzed using SPSS version 17.0. A preliminary frequency output was analysed for missing values. Frequency analysis for each item showed that responses for each domain had minimum and maximum values with the range of 1–5. The percentage of missing values was under 5% and random. The missing data was replaced by the series mean method. A preliminary analysis to check the Mean, SD, Skewness & Kurtosis values, Corrected item-total correlation and alpha if item deleted of all the *swadhyaya* scale`s items was done.

Items were screened for outliers on the basis of mean and SD. For the robustness of the scale a strict criteria of SD>1.0 and Mean range 2-4 (Jackson 1970) was followed. Four items were deleted due to less than 1 SD and the remaining items had acceptable range of Mean & SD (M range = 2.53 - 3.87 and SD range = 1.00- 1.19). All the items were found within limits for skewness (range= -0.76 to 0.19) (sk<2.0, Tabachnick & Fidell, 1996) and kurtosis (range= -0.81 to -.075) (K<7.0, Finch, 1996). Further one item was discarded due to low corrected item-total correlation (< 0.20 , Kline, 1993) and remaining items range was acceptable (r = 0.23 to 0.60). All Alphas for if-item deleted were high (above α =.81) and in acceptable range.

The KMO values and Bartlett test for *Swadhyaya* Scale (0.85, p<0.001) was very good. Hence, the data were found fit for subsequent factor analyses.

Principal Component Analysis with Varimax rotation was used on remaining 16 items. Initially, four factors emerged with > 1 eigen value but the fourth factor had only 2 items. Russell (2002) reported that at least three items per factor are required for a factor model to be identified. Therefore, three factor solution was explored. This was accepted as the factor solution showed at least of three items under each factor with all loadings above 0.40. Consequently, a 3 factor solution was observed to be most suitable, explaining 55.70% of variance (see table no.1 for details).

Table 1: Exploratory Factor Analysis of Swadhyaya Scale

Item no.	F1	F2	F3
(S2)	.84		
(S3)	.78		
(S1)	.77		
(S4)	.74		
(S19)		.79	
(S18)		.76	
(S20)		.76	
(S21)		.68	
(S17)		.61	
(S5)		.52	
(S11)			.74
(S12)			.72
(S10)			.70
(S14)			.68
(S13)			.63
(S16)			.47
Eigen value	4.78	2.79	1.34
% of variance	29.79	17.44	8.47

Note: Principal Component Analysis with Varimax rotation was used.

Three factors that were emerged are explained as follows:

Study of Scriptures (Factor 1-SS): According to Hindu philosophy, studying and analysing religious scriptures helps in better understanding of the concept of God. It helps knowing the self. This sub factor consisted of 4 items, like Reflecting on the teachings, reading and following spiritual teachings, agreeing on the spiritual texts lead to strong mental state. The eigenvalue was 4.78 and it explained 29.89 % age of variance.

Introspection (Factor 2 - IS): Introspection refers the examination of one's own conscious thoughts and feelings. It also refers to relating one's experiences to actions. It activates spirituality and ultimately disassociation from negativity. In psychology the process of introspection relies exclusively on observation of one's mental state, while in a spiritual context it may refer to the examination of one's inner self. The factor consisted of 6 items. The eigenvalue was 2.79 and it explained 17.44% age of variance.

Self - discipline (Factor 3- SD): Contrary to common belief, self-discipline does not mean being harsh toward yourself, or living a limited, restrictive lifestyle. Self-discipline means self-control, which is a sign of inner strength and control of yourself, your actions, and your reactions. It leads to a determined, steady and regular approach towards achieving goals. The factor consisted of 6 items. The eigenvalue was 1.35 and it explained 8.47 %age of variance.

Reliability and Concurrent Validity

The concurrent validity was established by correlating *Swadhyaya* scale and its factors with *Sukha, Dukha*, Flourishing, SPANE P and SPANE N as validating domains. The results showed significant correlation supporting our hypothesis as *Swadhyaya* and its sub-factors being positively correlated with *Sukha*, flourishing and SPANE P (positive experiences) however correlation with *Dukha* and SPANE N (negative experiences) were insignificant. The Scale reliability was very good for the *Swadhyaya* and its dimensions (α = 0.78 to 85), (see table no 2 for details).

Table 2: Correlation between Swadhyaya scale & its factors with validating scales

	Sukha	*Dukha*	SPANEP	SPANEN	FS	F1	F2	F3	*Swadhyaya*
Sukha	*(0.86)*								
Dukha	-.33**	*(0.91)*							
SPANE P	.63**	-.44**	*(0.87)*						
SPANE N	-.29**	.68**	-.41**	*(0.76)*					
FS	.54**	-.36**	.60**	-.31**	*(0.93)*				
SS (F1)	.20**	-.07	.16**	.04	.21**	*(0.85)*			
IS (F2)	.33**	-.07	.35**	-.06	.46**	.25**	*(0.78)*		
SD (F3)	.19**	.06	.18**	.04	.07	.43**	.15**	*(0.79)*	
Swadhyaya	.34**	-.01	.34**	.00	.34**	.57**	.71**	.79**	*(0.80)*

*** Correlation is significant at the 0.01 level (2-tailed). Swadhyaya factors-F1-F3; Study of Scriptures (SS), Self-introspection (IS) and Self-discipline (SD). Cronbach alphas for the scales/sub-scales displayed across the diagonal in bold italics.*

DISCUSSION

The main purpose of the study was to construct a scale to measure *Swadhyaya* as defined by Indian philosophical/religious texts. It adds to the growing research literature on indigenous Indian concepts like *Triguna* (Misra, Suvasini, and Srivastava, 2000; Murthy and Kumar, 2007; Khanna, Singh, Singla and Verma, 2013), *Sat-chit-anand* (Singh, Khari, Amonkar, Arya and Kasav, 2013), *Anasakti*(Singh &Raina, 2015; Bhushan and Jha, 2005; Banth and Talwar, 2012), *Sukha*and*Dukha* (Singh, Raina&Sahni, 2016) etc. The psychometric properties showed that the test is reliable and a valid measure. Earlier researches (Singh, Misra and Raad, 2013) have emphasized the importance of the vernacular language in the study of psychological variables. More so in Indian context where over 41 % of population speak Hindi as per census 2001. Therefore, the scale has been developed in Hindi first.

All retained items of the scale have acceptable descriptive statistics like Mean range, SD, skewness, kurtosis, corrected Item- total correlations (CIT) and alphas if item deleted.

The empirical structure of final scale that emerged consisted of 16 items, with a three factor structure explaining 55.70% of variance. It was found to be both psychometrically sound and most proximal to the conceptual framework. All factor loadings of retained items were greater than 0.40. For interpretive purposes cut-off point of loadings of 0.40 or higher is suggested (Stevens, 2002). The factor structure was in line with the Indian philosophy that views *Swadhyaya*not only as study of scriptures but as a *niyama* - an approach of achieving a state of introspection, self-discipline, self-control, self –determination and ultimately self- awareness. Correlations between the validating scales and *Swadhyaya*scale and its factors further validated the scale. The present study findings suggested that *Swadhyaya* was positively associated with positive facets of WB, however it was not associated with negative facets of WB.The overall scale exhibits high internal consistency (a=0.80).

Thus this study makes theoretical contributions towards enriching the meaning of self- study, self- discipline, self-introspection, self- awareness and well-being in the Indian context. The theory may enhance the understanding and importance of *Swadhyaya*. Conceptualization of *Swadhyaya* and its measure was an attempt to synergize Indian concepts with main stream of psychology. The empirical validation reduces the data-theory disconnect, providing it robustness and scope for testing across cultures.

LIMITATIONS AND FUTURE SCOPE

The present study established psychometric properties of Swadhyaya scale by exploratory factor analysis. It can be confirmed further through confirmatory factor analysis. T resultant model can still be tested on a wider population. The role of demographic variables such as gender, age, religion can also be studied. Lastly, Scale may be translated in other languages for its broader use.

Conflict of Interests
The author declared no conflict of interests.

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