

Evolution of the Construct of Resilience: Challenges in Measurement

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Abstract

Resilience as a concept was understood as ‘not being vulnerable to life adversities’ or ‘performance amidst disadvantages. Resilience as a construct had undergone changes with different waves of research. From being defined as an innate ‘trait’ to being recognised as a multifactorial functional process, the construct has undergone mutation. The outcome of being the subject of research for more than four decades now, the characteristics of resilience can be crystallised to being dynamic, multidimensional, multifactorial, and multilevel. This posed a challenge to arriving at a holistic measurement of the construct. This article attempts to chronicle the efforts at measuring the construct and identifying the gaps in the existing resilience tools. The article in conclusion, highlights the Synergy Model of Resilience in evolving a holistic approach to measure resilience. It also describes the Resilience Test Battery (REST Battery) that successfully tested the Synergy model by measuring resilience as a multidimensional construct.

Keywords: resilience, measurement, synergy model of resilience, and resilience test battery

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The journey of resilience has seen waves of research that included theoretical presentations and empirical studies. The construct has been researched now for more than four decades. The origin of the construct can be traced to a time when there was a paradigm shift from human maladaptive behaviour to human growth and positive behaviour. The researchers started focusing on the positive strength that helped an individual during the times of crisis. This focus was unlike the previous perspective, wherein the vulnerability to crisis, risk factors, and suffering and their impact on life was studied.

The pioneering years of resilience research is the basis of all later development that happened to the construct. Alike any new idea, the initial years of research was more explorative and reflected the then contemporary understanding of resilience as a construct. The initial research of Garnezy (1970) explained how a rare few children turned out to be 'invulnerable' despite being in an adverse situation. Thus, the construct of resilience began to be viewed as a rare 'trait' of a few, mostly recognised as an innate characteristic.

With coming years of research, the construct was recognised as a product, as an ability, as a capacity, as adaptation and as a multidimensional functional process. This evolving nature of resilience research might have richly contributed to the literature. However, there are two important observations in this context. Firstly, the definition of resilience appears fluid and secondly, such a fluid understanding would reap measurement issues while handling the construct. It appears to be a difficult task to narrow down the definition of resilience. Further, it has a cascading effect leading to difficulty in operationally defining, constructing and validating tools measuring resilience.

Method

This paper reviewed 49 years of research publications starting from 1970 to 2019. The sources included edited volumes of books on resilience and journal articles retrieved from Google Scholar, Research Gate, and Academia and articles from journals published by Science Direct, Elsevier, Springer, Sage, JSTOR and other national and international journals. The focus of this review article was on the various measurement tools used in empirical research.

Review of Literature: In order to understand the problems in measuring resilience and the problems in the tools measuring resilience, there is a need to critically review the different tools. While reviewing the tools measuring resilience, they can be categorised into, tools directly measuring resilience, like Resilience Scale (Wagnild & Young, 1993), Connor Davidson Resilience Scale (Connor & Davidson, 2003) and Brief Resilience Scale (Smith, Dalen, Wiggins, Tootley, Christopher & Bernard, 2008). Secondly, resilience measuring tools for a specific age group like Child and Youth Resilience Measure (Ungar & Leinbenberg, 2011), Adolescent Resilience Scale (Oshio, Nakaya, Kaneko, & Nagamine, 2002), Adolescent Resilience Scale (Bulut, Dogan, & Altungdag 2013), Youth Resiliency: Assessing Development Strength questionnaire (Donnon & Hammond, 2007), Resilience Scale for Adolescent (Hjemdal, Friborg, Stiles, Martinussen, and Rosenvinge (2006), and Resilience Scale for Adults (Friborg, Barlaug, Martinussen, Rosenvinge, and Hjemdal, 2005). Thirdly, resilience measuring tools with a hybrid approach (with a co-construct) like Brief Resilience Coping Scale (Sinclair & Wallston, 2004), Dispositional Resilience Scale (Sinclair, Oliver, Ippolito, & Ascalon, 2003), Resilience Attitude and Skills Profile (Hurtes & Allen, 2001), and Academic Resilience Scale (Kaur & Singh, 2016).

The tools from the three categories are presented with their tool description and how resilience is measured and followed by the critical appraisal of the tool.

Tools directly measuring Resilience

Resilience Scale (Wagnild & Young, 1993), Connor Davidson Resilience Scale (Connor & Davidson, 2003) and Brief Resilience Scale (Smith, Dalen, Wiggins, Tootley, Christopher & Bernard, 2008) are found to focus on the personal characteristics, hypothetical resilient responses, and appeared to have ambiguity over the construct of adversity. Resilience Scale (Wagnild & Young, 1993), a self-reporting scale, has two factors viz. personal competence and acceptance of self and life. It has 14 items and the response format is on a 7-point scale that ranges from Disagree (1) and Agree (7). Higher the score denotes higher the resilience. The scale is a combination of statements of positive characteristics (e.g. humour and self-discipline) and simulated resilient response (e.g. finding way out from problem situation). Thus, the scale measured the hypothetical positive characteristics in an individual. Thus, one cannot rule out the social desirability factor in a self-reporting tool having hypothetical situations.

Connor Davidson Resilience Scale (CD-RISC) (2003) is a 5-point scale with 25 items. The items of the scale were drawn from varied sources, to name a few, from the hardiness (Kobasa, 1979), from Rutter's contributions orienting towards self-esteem, self-confidence, adaptability, humour, taking responsibility to tackle stressors and Lyon and colleagues' (1999) research on enduring adversity with patience. The scale was administered on four types of sample: primary care outpatients, outpatients who have general psychiatric complaints, community sample, clinical trial of generalized anxiety disorder, and participants from two clinical trials of PTSD. The reliability was found to be 0.98 and the scale had good

construct validity. Even this scale measured resilience as a collection of personal characteristics.

Brief Resilience Scale (Smith, Dalen, Wiggins, Tootley, Christopher, & Bernad, 2008) has six items focusing on recovery from adverse situations. It is a 5-point Likert scale. The scale looked at resilience as bouncing back from hard times, recovery from difficult times and stressful events with less of trouble and not too long to get over from setbacks in life. It can be seen that the measure of adversity is lacking, in fact, adversity is denoted by hard times, difficult times, setbacks, thereby missing a very important constituent related to the magnitude of adversity. The tool also missed to record the actual measure of the adversity experienced.

It can be observed that all the three scales had no measurement of adversity or its degree of severity, the tools were a list of personal characteristics possessed by the individual. The major requirement of locating the adversities with their severity in a way was compromised by introducing an element of ambiguity by the use of terms such as difficult times/setbacks/hard times. Thus, the tools could not measure resilience in its totality.

Age specific resilience tools

There were resilient tools constructed for a specific age group like the adolescents and adults. Child and Youth Resilience Measure (Ungar & Liebenberg, 2011), the tool consisted of adversities relevant to the group that included institutionalization, exposure to community violence, social dislocation, mental health problems, poverty, homelessness, war and exposure to political turmoil. The reliability was between 0.70 – 0.82 and convergent and criterion validity was assessed. This study has been extensive in covering different cultures, sample from 11 countries, the scope of adversities is fairly good and the measure includes internal and external atmosphere (which are culture sensitive) for resilience to emerge. This was the first resilient tool to give considerable importance to cultural and spiritual factors

contributing to resilience and it was administered on a sample which was culturally diverse. It has also included both personal and environmental factors. One significant factor that is missing in the study is the measurement of perceived severity and length or frequency of exposure to the adversity which play a determining role in impacting the person subjected to such adversities.

Adolescent Resilience scale (Oshio et al. 2002) consisted of 21 items with three factors viz. Novelty seeking, Emotional regulation and Positive future orientation. In addition to construction of this tool, as part of validation the resilience was correlated with allied constructs. Resilience score did not correlate with the scale of Negative Life Events and negatively correlated with General Health Questionnaire. There emerged three clusters after conducting a cluster analysis. First cluster were mentally healthy participants who had little experience of Negative Life Events, second cluster were participants who had poorer mental health along with many Negative Life Events and the third cluster were mentally healthy participants even after experiencing many Negative Life Events. The first cluster denoted the Well adjusted, the second cluster denoted the Vulnerable and the third cluster denoted the Resilient. When compared the mean scores of the cluster of well adjusted and the cluster of Resilient were higher than the vulnerable group and this was used as indicator of construct validity. It is a Likert scale with 5-point rating scale, wherein 5 = “definitely yes” and 1 = “definitely no”. The reliability was 0.85 suggesting a good construct validity (Oshio Kaneko, Nagamine, & Nakaya, 2003). The scale apparently measured the internal characteristics rather than resilience in the face of adversity. Looking at the factors Novelty seeking, Emotional regulation and Positive future orientation it indicates the positive characteristics that one requires to possess to successfully face adversity.

Another similar adolescent scale is, Adolescent Psychological Resilience Scale (Bulut, Dogan, & Altungdag, 2013). It includes factor such as empathy, family support,

adjustment, confidant-friend support, sense of struggle and school support. Reliability was 0.81 and criterion validity was assessed. It is a 4-point Likert scale (“Not exactly suitable for me” = 1; “Exactly suitable for me” = 4).

Donnon and Hammond (2007) constructed and validated the Youth Resiliency: Assessing Developmental Strengths questionnaire. It was based on the strength-based approach. They defined resilience as a combination of intrinsic or personality attributes like self-efficacy, self-esteem etc and extrinsic or interpersonal environment like family support, community environments and positive peer influence. It consisted of 94 items with 10 factors measuring aspects of family, self-concept, community, self-control, social sensitivity, work—commitment to learning, peers, cultural sensitivity, school culture, and empowerment. There were items to check the frequency of the engagement into at risk behaviour and the pro social behaviour. It also was tested for reliability which produced a Cronbach’s alpha 0.75 to 0.96. Though the tools are mindful of including the environmental factors like family, school, confidante, work and peer support in addition to internal factors like empathy and sense of struggle and adjustment, self-concept and self-control, it did not measure adversity. Resilience is measured as combination of internal factors which is very restrictive and incomplete way of measuring resilience.

Hjemdal, Friborg, Stiles, Martinussen, and Rosenvinge (2006), adapted 41 items from Resilience scale for adults (RSA) to construct Resilience scale for adolescents (READ). It consisted of five factors, a) Personal Competence, (b) Social Competence, (c) Structured Style, (d) Family Cohesion, and (e) Social Resources. Out of 41 items, two items were deleted and the rest 39 items were retained in the scale. A semantic differential scale was used in the first version of READ but later since some adolescent participants found it difficult to understand and respond, it was changed to 5-point Likert scale. Construct validity was checked by validating it with Short Mood and Feelings Questionnaire (SMFQ). The

reliability of READ is 0.70 to 0.90. Resilience is measured as a permutation of internal and external factors.

The source of Resilience Scale for Adolescents was Resilience Scale for Adults. Friberg, Barlaug, Martinussen, Rosenvinge, and Hjemdal (2005) constructed Resilience Scale for Adults (RSA) consisting of 'personal strength', 'social competence', 'structured style', 'family cohesion' and 'social resources'. It consisted of 33 items. The unique feature of the scale is the response type being semantic differential scale. Higher score denotes better adjustment and higher resilience. Friberg et al (2005) cross validated RSA with personality, cognitive abilities, and social intelligence. The scale was measured for convergent and discriminant validity. Resilience factors of the scale were positively correlated to well adjusted personality type profile. RSA-personal strength was associated with emotional stability; social competence was correlated with 5Personality Factors-extroversion and 5Personality Factors-agreeableness, as well as Troms Social Intelligence Scale-social skills. Structured style associated with conscientiousness. It was interesting to find that RSA-family cohesion and RSA-social resources too correlated with the construct of personality. These correlations supported convergent validity. RSA remained not correlated to cognitive abilities measured by Raven's Progressive Matrices, thereby supporting discriminant validity. However, the validation of RSA was conducted on an exclusive sample of applicants of military training, which could affect the generalisability of the validation.

The critical appraisal of the age specific resilience tools state that among all the six age related resilience tools, only Child and Youth Measure of Resilience (Ungar & Liebenberg 2006) has included adversity as part of the tool. The remaining tools neither included adversity as part of the tool nor have considered any adversity specific to adolescent age group. However, all the tools except Adolescent Resilience Scale by (Oshio, Nakaya, Kaneko, & Nagamine, 2002) have included both internal and environmental factors. In

factadolescent related external factors like school, peer, friend, family and community are featured in the tools. It is important to observe that resilience is measured as a combination of internal and external characteristics with no reference to exposure to adversity.

Tools with a Hybrid approach

Resilience measuring tools with a hybrid approach refers to situations where resilience is measured using a co-construct. The Brief Resilience Coping Scale (BRCS) (Sinclair & Wallston, 2004) is a good example for this. The scale was constructed with nine items having theoretical affiliation to cognitive behaviour therapy. The scale describes an active problem solving coping that reflects resilient coping pattern. The factor analyses, gave rise to two factors. Four items that cleanly loaded in the first component constituted the scale as it suited the theoretical requirements. This four-item scale is a 5-point Likert scale. Construct validity was investigated and reliability was 0.69.

Dispositional Resilience Scale (Sinclair, Oliver, Ippolito, & Ascalon, 2003). The scale has six dimensions- Control, Powerlessness, Commitment, Challenge, Alienation and Rigidity. It is a 5-point Likert scale wherein the name of the scale itself suggested that it measures one's disposition and not resilience. The scale measured the aspects of hardiness and not purely resilience.

Resilience Attitude and Skills Profile (Hurtes & Allen, 2001). It has seven dimensions viz. insight, value orientation, humour, initiativeness, creativity, independence, and relationships. It is 6-point response scale. The scale indicates how attitudes and skills like value orientation, creativity, etc. help in an individual being resilient. Possession of these attitude and skills is understood as resilience.

There are tools constructed to measure resilience in a context of academics like the Academic Resilience Scale (Kaur and Singh, 2016). The initial item pool of the scale consisted of 93 items, which were given to experts for pruning. This reduced the number of

items to 68. Further, this was pilot tested and item discrimination index was measured. The discriminative power of each of these 68 statements were checked and the ones falling in the range of 0.20 to 0.90 were retained and the rest were discarded. This brought the final count of items of the scale to 55 out of which 40 were positive items and 15 negative items. The scale is a 5-point Likert scale. Higher score reflected higher academic resilience. The scale was standardised with a good reliability value ($r= 0.70$) and the concurrent validity was assessed by expert evaluation. The tools measured the five dimensions – personal accountability, positivity, self-reliance, persistence and problem-solving ability. It indicated the positive characteristics possessed by the individual. However, it did not reflect specific academic related dimensions in its measurement.

Ego Resiliency scale (Block & Kreman, 1996) is a unidimensional scale that focuses on possessing novelty seeking behaviour, novelty thinking, curiosity, and flexibility to adapt to new and unusual situations. The scale indicates resilience as a personality trait and measures the personal characteristics to be present in one to be called as resilient. Possession of these personal traits is identified as resilience.

Resilience tool that followed a hybrid approach i.e. measuring resilience along with a co-construct has more bane than boon. Firstly, the chances of intrusion of intervening variables into the measure resilience or the co-construct is high. Thus, spirit of measuring resilience would be compromised because of the presence of another construct. Further, though resilience and the co-construct may be correlated there may arise conceptual conflict and methodological issues by combining them in measurement. More importantly, even the hybrid approach has missed including the measurement of adversity.

So far, each tool measuring resilience was individually reviewed. However, a phenomenal effort by Windle (2011) in conducting a methodological review of the existing

tools measuring resilience cannot be missed. From eight databases, 15 scales measuring resilience was critically reviewed on nine psychometric parameters. These nine parameters were content validity, interpretability, criterion validity, floor and ceiling effect, internal consistency agreement, reliability, responsiveness, and construct validity. None of the resilience tools scored high in the parameters (in other words meeting the 'gold standard'). It was found that all the measures had missing information regarding their psychometric properties. Only three tools, Connor Davidson Resilience Scale (Connor & Davidson, 2003), Resilience Scale for Adults (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005) and Brief Resilience Scale (Smith, Dalen, Wiggins, Tootley, Christopher, & Bernard, 2008) fulfilled the criterion of recording the psychometric details. Having reviewed 15 tools measuring resilience, only five tools were capable of measuring resilience on multiple levels that reflects conceptual adequacy.

These five tools are the Child and Youth Resilience Measure (Ungar & Liebenberg 2006), the Resilience Scale for Adults (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005), the Resilience Scale of the California Healthy Kids Survey (Sun & Stewart 2007), and the Resilience Scale for Adolescents (Hjemdal, Friborg, Stiles, Martinussen, and Rosenvinge, 2006) and the Youth Resiliency: Assessing Developmental Strengths (Donnon & Hammond, 2007).

Critical appraisal

None of the reviewed scales has a measurement of adversity, one of the pre requisite of resilience. Thus, the existing resilience scales function on the basis of assumed adversity instead of measured adversity. In other words, these scales do not relate to whether the respondent experienced adversity or not. This leaves an open possibility that one may respond to it hypothetically. If so, the measurement cannot qualify as the real measurement of the construct of resilience.

All these scales over emphasise on protective (internal) factors and promotive(external) factors. Nevertheless, presence of such characteristics cannot be implied as presence of resilience, which is not consistent with Rutter's statement that protective factors are not resilience neither do they create resilience. The process of resilience is not adequately reflected in these scales. The process of resilience involves the way the protective factors operate to create a buffer against the adversity. This is not found to have captured by any of the tools.

The conceptual definition of resilience is still debatable. In addition to that, the conceptual and theoretical understanding of resilience is not translated into measurement through tools. This indicates the glaring inconsistency between what resilience is (definition) and how resilience is measured. Theory or a model denotes and describes the construct with its associated factors and interconnections. Thus, since majority of the tools discussed in preceding paragraphs are not found to be based on a theoretical foundation, they could not adequately and holistically measure resilience.

Rajendran, Hariharan, and Rao (2019) made an earnest effort to address these measurement issues related to resilience by constructing and validating the Resilience Test Battery (REST Battery) based on the theoretical model viz. Synergy Model of Resilience (Hariharan & Rana, 2017). Thus, based on a sound theoretical foundation, developing a comprehensive measurement called Resilience Test Battery (REST) evolved as psychometrically a robust and theoretically a grounded tool.

The REST Battery took into consideration the factor of life adversities not only in its diverse forms but also in terms of their severity, duration and frequency of experience. Similarly, the positive internal characteristics of the individual measured in terms of their presence and the significance attached to them and the positive external/environmental factors with their perceived significance measured by the scale focused only on the real life

experience of the respondent. In addition to these, the measurement of significant life achievements as well as computation of flourishing score based on life experience furnished all the necessary variables required to measure resilience. Thus, the REST Battery not only measured all factors associated in the complex, measure of resilience but also succeeded in removing the hypothetical factor in experience of adversity or response to the adversity.

Since resilience is a complex phenomenon, Rutter (1999) suggested in obtaining the resilience score as a product score through mathematical approach. The REST Battery (Rajendran, Hariharan, & Rao, 2019) also addressed this proposition by adopting a mathematical model in calculating the resilience score which they denoted as Resilience Index (RI). Resilience Index is a product of complex multifactorial derivation, based on Hariharan-Rana Synergy Model of Resilience (2017). This took into consideration all the factors like the adversity, protective factors, promotive factors, achievement and flourishing in their totality and reality of experience, thus capturing and quantifying resilience with all its complexity.

The synchronisation of the Synergy Model of Resilience, the constructed REST Battery and the mathematical formula derived Resilience Index makes the triad a strong and holistic measure of resilience. In other words, Resilience Index is a product or a concoction of all the essential components like adversity, protective factors, promotive factors, resistance, and outcome factors. Thus, it can be concluded that the triad of Synergy Model of Resilience – REST Battery – Resilience Index have successfully answered the major gaps in measurement of resilience. However, there is a need to apply REST battery on population across cultures, and regions in various parts of the globe in order to arrive at norms based on Big Data.

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